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# The Victoria History of the Counties of England

EDITED BY WILLIAM PAGE, F.S.A.

# A HISTORY OF SHROPSHIRE

IN FOUR VOLUMES

VOLUME I

# THE VICTORIA HISTORY OF THE COUNTIES OF ENGLAND

## SHROPSHIRE

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# GENERAL ADVERTISEMENT

The Victoria History of the Counties of England is a National Historic Survey which, under the direction of a large staff comprising the foremost students in science, history, and archaeology, is designed to record the history of every county of England in detail. This work was, by gracious permission, dedicated to Her late Majesty Queen Victoria, who gave it her own name. It is the endeavour of all who are associated with the undertaking to make it a worthy and permanent monument to her memory.

Rich as every county of England is in materials for local history, there has hitherto been no attempt made to bring all these materials together into a coherent form.

Although from the seventeenth century down to quite recent times numerous county histories have been issued, they are very unequal in merit; the best of them are very rare and costly; most of them are imperfect and many are now out of date. Moreover, they were the work of one or two isolated scholars, who, however scholarly, could not possibly deal adequately with all the varied subjects which go to the making of a county history.

In the VICTORIA HISTORY each county is not the labour of one or two men, but of many, for the work is treated scientifically, and in order to embody in it all that modern scholarship can contribute, a system of co-operation between experts and local students is applied, whereby the history acquires a completeness and definite authority hitherto lacking in similar undertakings.

The names of the distinguished men who have joined the Advisory Council are a guarantee that the work represents the results of the latest discoveries in every department of research, for the trend of modern thought insists upon the intelligent study of the past and of the social, institutional, and political developments of national life. As these histories are the first in which this object has been kept in view, and modern principles applied, it is hoped that they will form a work of reference no less indispensable to the student than welcome to the man of culture.

## THE SCOPE OF THE WORK

The history of each county is complete in itself, and in each case its story is told from the earliest times, commencing with the natural features and the flora and fauna. Thereafter follow the antiquities, pre-Roman, Roman, and post-Roman; ancient earthworks; a new translation and critical study of the Domesday Survey; articles on political, ecclesiastical, social, and economic history; architecture, arts, industries, sport, etc.; and topography. The greater part of each history is devoted to a detailed description and history of each parish, containing an account of the land and its owners from the Conquest to the present day. These manorial histories are compiled from original documents in the national collections and from private papers. A special feature is the wealth of illustrations afforded, for not only are buildings of interest pictured, but the coats of arms of past and present landowners are given.

## HISTORICAL RESEARCH

It has always been, and still is, a reproach that England, with a collection of public records greatly exceeding in extent and interest those of any other country in Europe, is yet far behind her neighbours in the study of the genesis and growth of her national and local institutions. Few Englishmen are probably aware that the national and local archives contain for a period of 800 years in an almost unbroken chain of evidence, not only the political, ecclesiastical, and constitutional history of the kingdom, but every detail of its financial and social progress and the history of the land and its successive owners from generation to generation. The neglect of our public and local records is no doubt largely due to the fact that their interest and value is known to but a small number of people, and this again is directly attributable to the absence in this country of any endowment for historical research. The government of this country has too often left to private enterprise work which our continental neighbours entrust to a government department. It is not surprising, therefore, to find that although an immense amount of work has been done by individual effort, the entire absence of organization among the workers and the lack of intelligent direction has hitherto robbed the results of much of their value.

In the VICTORIA HISTORY, for the first time, a serious attempt is made to utilize our national and local muniments to the best advantage by carefully organizing and supervising the researches required. Under the direction of the Records Committee a large staff of experts has been engaged at the Public Record Office in calendaring those classes of records which are fruitful in material for local history, and by a system of interchange of communication among workers under the direct supervision of the general editor and sub-editors a mass of information is sorted and assigned to its correct place, which would otherwise be impossible.

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A special feature in connexion with the Architecture is a series of ground plans, many or them coloured, showing the architectural history of castles, cathedrals, abbeys, and other monastic foundations.

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# THE VICTORIA HISTORY OF SHROPSHIRE

EDITED BY

WILLIAM PAGE, F.S.A.

VOLUME ONE

LONDON

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1908

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# PREFACE

SHROPSHIRE, as a border county, has a history of peculiar interest, the principal part of which, however, is feudal and political. Hence it requires such a special treatment as the Rev. R. W. Eyton, M.A., bestowed upon it in his great work on the county, *The Antiquities of Shropshire*, published in twelve volumes, and completed in 1861. In this, the author treats mainly of the genealogies of the tenants at the time of Domesday and of the Anglo-Norman kings, periods of which he was peculiarly the master. His work throughout is careful, and he has a full appreciation of original sources, but it is clear from these volumes that the later history of the county had little interest for him. This work encouraged him to continue the study of his favourite period for other districts till his death in 1881, at the age of sixty-six. The Rev. C. H. Hartshorne wrote *Salopia Antiqua or an Inquiry into the Early Remains in Shropshire and the North Welsh Borders*, published in 1841, which, however, refers only to the archaeology of the county. *The History of Shropshire*, by John Corbet Anderson, published in 1864, is a smaller and a less scholarly work than that of Eyton.

The Editor wishes to express his acknowledgements to all those who have assisted in the work of this volume, particularly to the Rev. Prebendary T. Auden, M.A., F.S.A., Mr. J. Horace Round, M.A., LL.D., Mr. G. E. Fox, Hon. M.A., F.S.A., the Hon. Mrs. T. Bulkeley-Owen, and the late Mr. I. Chalkley Gould, F.S.A., for help in reading proofs and otherwise ; and to the Cambrian Archaeological Association, the Royal Archaeological Institute, the British Archaeological Association, and the proprietors of the *Reliquary*, for permission to reproduce illustrations.

# TABLE OF ABBREVIATIONS

| | |
|---|---|
| Abbrev. Plac. (Rec. Com.) | Abbreviatio Placitorum (Record Commission) |
| Acts of P.C. | Acts of Privy Council |
| Add. | Additional |
| Add. Chart. | Additional Charters |
| Admir. | Admiralty |
| Agarde | Agarde's Indices |
| Anct. Corresp. | Ancient Correspondence |
| Anct. D. (P.R.O.) A 2420 | Ancient Deeds (Public Record Office) A 2420 |
| Ann. Mon. | Annales Monastici |
| Antiq. | Antiquarian or Antiquaries |
| App. | Appendix |
| Arch. | Archæologia or Archæological |
| Arch. Cant. | Archæologia Cantiana |
| Archd. Rec. | Archdeacons' Records |
| Archit. | Architectural |
| Assize R. | Assize Rolls |
| Aud. Off. | Audit Office |
| Aug. Off. | Augmentation Office |
| Ayloffe | Ayloffe's Calendars |
| Bed. | Bedford |
| Beds | Bedfordshire |
| Berks | Berkshire |
| Bdle. | Bundle |
| B.M. | British Museum |
| Bodl. Lib. | Bodley's Library |
| Boro. | Borough |
| Brev. Reg. | Brevia Regia |
| Brit. | Britain, British, Britannia, etc. |
| Buck. | Buckingham |
| Bucks | Buckinghamshire |
| Cal. | Calendar |
| Camb. | Cambridgeshire or Cambridge |
| Cambr. | Cambria, Cambrian, Cambrensis, etc. |
| Campb. Chart. | Campbell Charters |
| Cant. | Canterbury |
| Cap. | Chapter |
| Carl. | Carlisle |
| Cart. Antiq. R. | Cartæ Antiquæ Rolls |
| C.C.C. Camb. | Corpus Christi College, Cambridge |
| Certiorari Bdles. (Rolls Chap.) | Certiorari Bundles (Rolls Chapel) |
| Chan. Enr. Decree R. | Chancery Enrolled Decree Rolls |
| Chan. Proc. | Chancery Proceedings |
| Chant. Cert. | Chantry Certificates (or Certificates of Colleges and Chantries) |
| Chap. Ho. | Chapter House |
| Charity Inq. | Charity Inquisitions |
| Chart. R. 20 Hen. III. pt. i. No. 10 | Charter Roll, 20 Henry III. part i. Number 10 |
| Chartul. | Chartulary |
| Chas. | Charles |
| Ches. | Cheshire |
| Chest. | Chester |
| Ch. Gds. (Exch. K.R.) | Church Goods (Exchequer King's Remembrancer) |
| Chich. | Chichester |
| Chron. | Chronicle, Chronica, etc. |
| Close | Close Roll |
| Co. | County |
| Colch. | Colchester |
| Coll. | Collections |
| Com. | Commission |
| Com. Pleas | Common Pleas |
| Conf. R. | Confirmation Rolls |
| Co. Plac. | County Placita |
| Cornw. | Cornwall |
| Corp. | Corporation |
| Cott. | Cotton or Cottonian |
| Ct. R. | Court Rolls |
| Ct. of Wards | Court of Wards |
| Cumb. | Cumberland |
| Cur. Reg. | Curia Regis |
| D. | Deed or Deeds |
| D. and C. | Dean and Chapter |
| De Banc. R. | De Banco Rolls |
| Dec. and Ord | Decrees and Orders |
| Dep. Keeper's Rep. | Deputy Keeper's Reports |
| Derb. | Derbyshire or Derby |
| Devon | Devonshire |
| Dioc. | Diocese |
| Doc. | Documents |
| Dods. MSS. | Dodsworth MSS |
| Dom. Bk. | Domesday Book |
| Dors. | Dorsetshire |
| Duchy of Lanc. | Duchy of Lancaster |
| Dur. | Durham |
| East. | Easter Term |
| Eccl. | Ecclesiastical |
| Eccl. Com. | Ecclesiastical Commission |
| Edw. | Edward |
| Eliz. | Elizabeth |
| Engl. | England or English |
| Engl. Hist. Rev. | English Historical Review |
| Enr. | Enrolled or Enrolment |
| Epis. Reg. | Episcopal Registers |
| Esch. Enr. Accts. | Escheators Enrolled Accounts |
| Excerpta e Rot. Fin. (Rec. Com.) | Excerpta e Rotulis Finium (Record Commission) |
| Exch. Dep. | Exchequer Depositions |
| Exch. K.B. | Exchequer King's Bench |
| Exch. K.R. | Exchequer King's Remembrancer |
| Exch. L.T.R. | Exchequer Lord Treasurer's Remembrancer |

# TABLE OF ABBREVIATIONS

| | |
|---|---|
| Exch. of Pleas, Plea R. | Exchequer of Pleas, Plea Roll |
| Exch. of Receipt | Exchequer of Receipt |
| Exch. Spec. Com. | Exchequer Special Commissions |
| Feet of F. | Feet of Fines |
| Feod. Accts. (Ct. of Wards) | Feodaries Accounts (Court of Wards) |
| Feod. Surv. (Ct. of Wards) | Feodaries Surveys (Court of Wards) |
| Feud. Aids | Feudal Aids |
| fol. | Folio |
| Foreign R. | Foreign Rolls |
| Forest Proc. | Forest Proceedings |
| Gaz. | Gazette or Gazetteer |
| Gen. | Genealogical, Genealogica, etc. |
| Geo. | George |
| Glouc. | Gloucestershire or Gloucester |
| Guild Certif. (Chan.) Ric. II. | Guild Certificates (Chancery) Richard II. |
| Hants | Hampshire |
| Harl. | Harley or Harleian |
| Hen. | Henry |
| Heref. | Herefordshire or Hereford |
| Hertf. | Hertford |
| Herts | Hertfordshire |
| Hil. | Hilary Term |
| Hist. | History, Historical, Historian, Historia, etc. |
| Hist. MSS. Com. | Historical MSS. Commission |
| Hosp. | Hospital |
| Hund. R. | Hundred Rolls |
| Hunt. | Huntingdon |
| Hunts | Huntingdonshire |
| Inq. a.q.d. | Inquisitions ad quod damnum |
| Inq. p.m. | Inquisitions post mortem |
| Inst. | Institute or Institution |
| Invent. | Inventory or Inventories |
| Ips. | Ipswich |
| Itin. | Itinerary |
| Jas. | James |
| Journ. | Journal |
| Lamb. Lib. | Lambeth Library |
| Lanc. | Lancashire or Lancaster |
| L. and P. Hen. VIII. | Letters and Papers, Hen. VIII. |
| Lansd. | Lansdowne |
| Ld. Rev. Rec. | Land Revenue Records |
| Leic. | Leicestershire or Leicester |
| Le Neve's Ind. | Le Neve's Indices |
| Lib. | Library |
| Lich. | Lichfield |
| Linc. | Lincolnshire or Lincoln |
| Lond. | London |
| m. | Membrane |
| Mem. | Memorials |
| Memo. R. | Memoranda Rolls |
| Mich. | Michaelmas Term |
| Midd. | Middlesex |
| Mins. Accts. | Ministers' Accounts |
| Misc. Bks. (Exch. K.R., Exch. T.R. or Aug. Off.) | Miscellaneous Books (Exchequer King's Remembrancer, Exchequer Treasury of Receipt or Augmentation Office) |
| Mon. | Monastery, Monasticon |
| Monm. | Monmouth |
| Mun. | Muniments or Munimenta |
| Mus. | Museum |
| N. and Q. | Notes and Queries |
| Norf. | Norfolk |
| Northampt. | Northampton |
| Northants | Northamptonshire |
| Northumb. | Northumberland |
| Norw. | Norwich |
| Nott. | Nottinghamshire or Nottingham |
| N.S. | New Style |
| Off. | Office |
| Orig. R. | Originalia Rolls |
| O.S. | Ordnance Survey |
| Oxf. | Oxfordshire or Oxford |
| p. | Page |
| Palmer's Ind. | Palmer's Indices |
| Pal. of Chest. | Palatinate of Chester |
| Pal. of Dur. | Palatinate of Durham |
| Pal. of Lanc. | Palatinate of Lancaster |
| Par. | Parish, parochial, etc. |
| Parl. | Parliament or Parliamentary |
| Parl. R. | Parliament Rolls |
| Parl. Surv. | Parliamentary Surveys |
| Partic. for Gts. | Particulars for Grants |
| Pat. | Patent Roll or Letters Patent |
| P.C.C. | Prerogative Court of Canterbury |
| Pet. | Petition |
| Peterb. | Peterborough |
| Phil. | Philip |
| Pipe R. | Pipe Roll |
| Plea R. | Plea Rolls |
| Pop. Ret. | Population Returns |
| Pope Nich. Tax. (Rec. Com.) | Pope Nicholas' Taxation (Record Commission) |
| P.R.O. | Public Record Office |
| Proc. | Proceedings |
| Proc. Soc. Antiq. | Proceedings of the Society of Antiquaries |
| pt. | Part |
| Pub. | Publications |
| R. | Roll |
| Rec. | Records |
| Recov. R. | Recovery Rolls |
| Rentals and Surv. | Rentals and Surveys |
| Rep. | Report |
| Rev. | Review |
| Ric. | Richard |

# TABLE OF ABBREVIATIONS

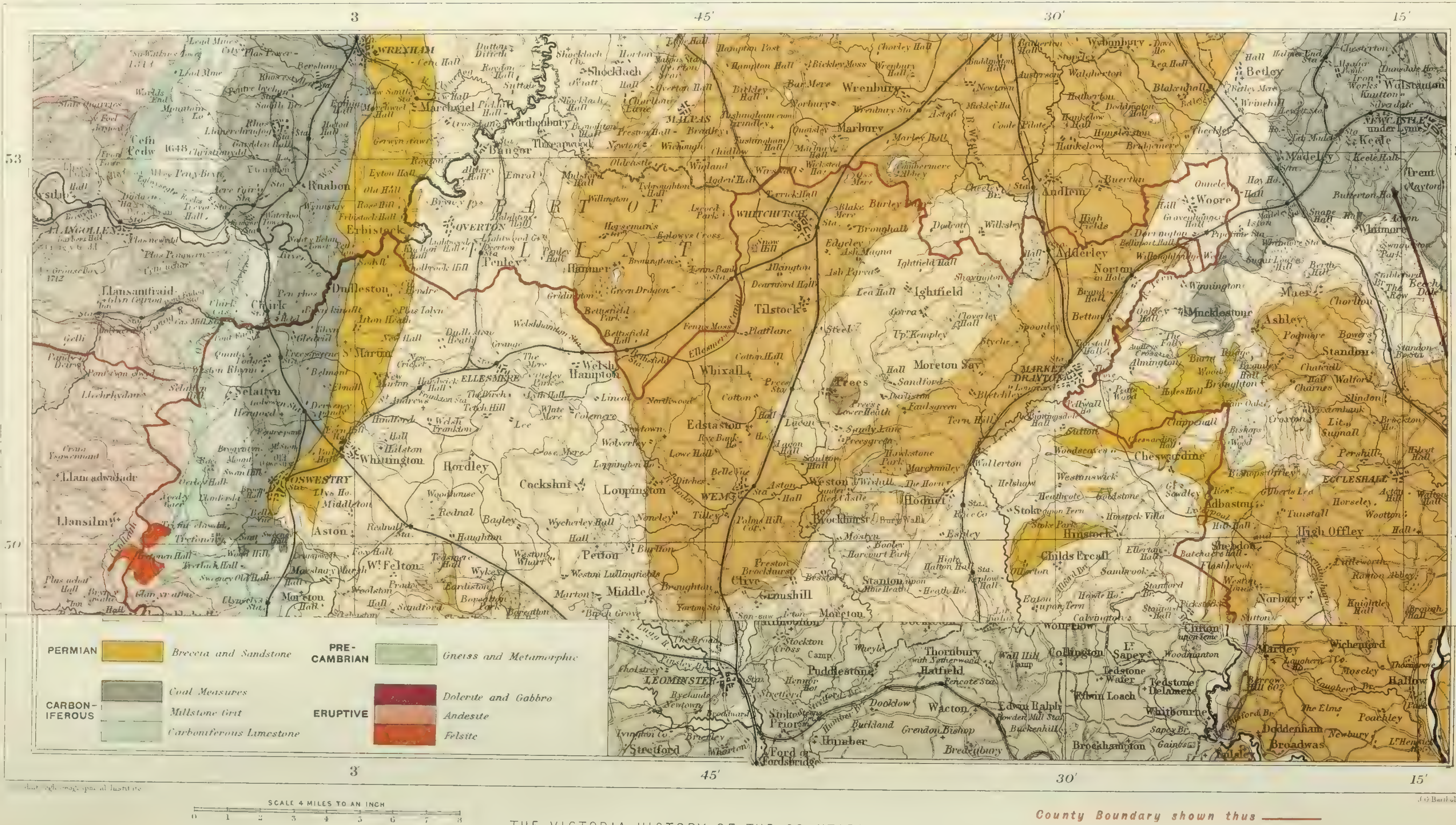
| | |
|---|---|
| Roff. . . . . | Rochester diocese |
| Rot. Cur. Reg. . | Rotuli Curiæ Regis |
| Rut. . . . . | Rutland |
| Sarum . . . . | Salisbury diocese |
| Ser. . . . . | Series |
| Sess. R. . . . . | Sessions Rolls |
| Shrews. . . . . | Shrewsbury |
| Shrops . . . . | Shropshire |
| Soc. . . . . | Society |
| Soc. Antiq. . . . | Society of Antiquaries |
| Somers. . . . . | Somerset |
| Somers. Ho. . . | Somerset House |
| S.P. Dom. . . . | State Papers Domestic |
| Staff. . . . . | Staffordshire |
| Star Chamb. Proc. | Star Chamber Proceedings |
| Stat. . . . . | Statute |
| Steph. . . . . | Stephen |
| Subs. R. . . . | Subsidy Rolls |
| Suff. . . . . | Suffolk |
| Surr. . . . . | Surrey |
| Suss. . . . . | Sussex |
| Surv. of Ch. Livings (Lamb.) or (Chan.) | Surveys of Church Livings (Lambeth) or (Chancery) |
| Topog. . . . . | Topography or Topographical |
| Trans. . . . . | Transactions |
| Transl. . . . . | Translation |
| Treas. . . . . | Treasury or Treasurer |
| Trin. . . . . | Trinity Term |
| Univ. . . . . | University |
| Valor Eccl. (Rec. Com.) | Valor Ecclesiasticus (Record Commission) |
| Vet. Mon. . . . | Vetusta Monumenta |
| V.C.H. . . . . | Victoria County History |
| Vic. . . . . | Victoria |
| vol. . . . . | Volume |
| Warw. . . . . | Warwickshire or Warwick |
| Westm. . . . . | Westminster |
| Westmld. . . . | Westmorland |
| Will. . . . . | William |
| Wilts . . . . | Wiltshire |
| Winton. . . . | Winchester diocese |
| Worc. . . . . | Worcestershire or Worcester |
| Yorks . . . . | Yorkshire |

# A HISTORY OF
# SHROPSHIRE

# GEOLOGICAL MAP.

# GEOLOGICAL MAP.

BASED ON THE MAPS OF THE GEOLOGICAL SURVEY



# GEOLOGY

THE county of Salop lies on that historic border-line along which the central plain of the English midlands abuts against the hilly region of the Welsh uplands. The northern and eastern part of the county forms a gently undulating lowland occupied chiefly by the red rocks of the Trias, largely overspread however with Glacial drift ; the southern and western region of pre-Carboniferous formations attains a much greater general elevation and presents a series of scarps and hollows, large swelling hills and stream-trenched plateaux. This contrast in the scenic aspect of the two regions is a direct reflex of structural and lithological differences among the rocks themselves. The soft Triassic marls and sandstones, nowhere tilted much from the horizontal, occupy comparatively low and level ground ; the indurated older Palaeozoic rocks, folded into sharp anticlines and synclines, have proved far more resistent to the various agencies of degradation.

As shown on the geological map, and in the list of formations, the rocks of Shropshire present us with an almost unbroken series from the Archaean to the Lias, and comprise some of the most ancient formations with which the geologist is acquainted.

The oldest rocks, the Archaean, centre about the Longmynd, from which, generally speaking, the strata of the Cambrian, Ordovician, and Silurian systems dip away on either hand in a series of scarps and hollows. On the north-west are the successive escarpments of the Stiperstones quartzite, the Stapeley ashes and the Hagley ashes, all due to the outcrops of hard and durable rocks ; on the south-east we have the successive ridges of Chatwall, Church Preen, Wenlock Edge, and Weo Edge, marking the outcrops of the Caradoc sandstones and various Silurian limestones. The hollows between the ridges are occupied by softer and more easily eroded strata such as for example the Wenlock shales which have originated the long valley of Apedale.

All these ridges and hollows range about south-west and north-east, and traced in this latter direction they are found to pass under the Carboniferous and Triassic rocks which extend obliquely across the county from Oswestry to Bewdley.

The occupations of the inhabitants are mainly connected with agriculture, but coal and iron mining are carried on in the Coalbrookdale coalfield and to some extent in the other coal districts also ; the metalliferous mines of the Shelve region have been known and worked since Roman times, and the basalt of the Titterstone Clee Hill is largely wrought for paving-cubes and roadstone.

We shall now deal with each of the rock formations in order, beginning with the lowest and oldest.[1]

TABLE OF FORMATIONS IN SHROPSHIRE

| Period | Formation | | Character of the Strata | Approximate Thickness in Feet |
|---|---|---|---|---|
| Recent | Alluvium | | Gravel, sand, loam, clay, and peat; along streams and in hollows | Up to 40 |
| Pleistocene | Old River Drift | | Gravel, sand, loam, &c., of old river terraces | Up to 20 ? |
| | Glacial Drift | | Sand, gravel, boulder-clay; boulders of far-distant rocks | Up to 210 |
| Jurassic | Lias | Middle | Sandy and clayey limestone, clays with limestone nodules | 30 ? |
| | | Lower | Dark shales | 300 ? |
| Triassic | Rhaetic | | Black shales | Up to 24 |
| | Keuper | Marl | Red marl, mottled green; buff and green (Tea-green Marls) at top | 3,000 |
| | | Sandstone | Red, brown, and white sandstones, and red marls | 300 ? |
| | Bunter | Upper | Fine red sandstone | Up to 500 ? |
| | | Middle | Pebbly red sandstone and pebble-beds | Up to 500 ? |
| | | Lower | Fine red false-bedded sandstone | Up to 650 |
| Carboniferous | 'Permian of Salopian Type' | | Red sandstone and marl, with 'trappoid' breccia, conglomerate, thin coals, and *Spirorbis* limestone | 1,500 |
| | Coal Measures | Newer Measures | Grey, yellow, and green sandstones, shales, and brick clays; a few thin pyritous coals; *Spirorbis* limestone | Up to 1,700 ? |
| | | Older Measures | Grey and black shales, with sandstones, ironstone, fire-clay, and many coal-seams | |
| | Millstone Grit | | Grey and yellow conglomerate, sandstone, and shales | Up to 200 ? |
| | Carboniferous Limestone | | Limestone and shale | Up to 400 |
| Devonian | Old Red Sandstone or Estuarine Devonian | | Red and yellow sandstones, shales, and marls, with cornstones | Up to 3,700 ? |
| Silurian | Ludlow Series | | Grey and red shales, yellow sandstone, and a blue limestone band | 1,000 |
| | Wenlock Series | | Grey mudstones and a blue limestone band | 3,000 |
| | Llandovery Series | | Purple shales and pebbly sandstones and conglomerates | 500 |
| Ordovician | Chirbury (Bala) Series | | Shales, flags, sandstones and grits, with ash-beds and lava-flows | 4,000 ? |
| | Meadowtown (Llandeilo) Series | | Shales, flags, mudstones, and limestones | 9,000 ? |
| | Shelve (Arenig) Series | | Shales, grits, and quartzite, with ash-beds and lava-flows | 3,000 ? |

[1] For publications relating to the geology of Shropshire the reader is referred to a 'List of Works [up to 1887] on the Geology, Mineralogy, and Palaeontology of Shropshire,' by W. Whitaker and W. W. Watts, in *Trans. Shrops. Arch. and Nat. Hist. Soc.* vol. xii. Some later papers will be found in Prof. Blake's 'Annals of Brit. Geol.' for 1890–3, and in the 'Geol. Literature added to the Geol. Soc. Lib.' published annually. A full list of papers on the Glacial deposits is given in 'A Bibliography of Midland Glaciology,' by W. J. Harrison in *Proc. Birm. Nat. Hist. and Phil. Soc.* vol. ix (1895), p. 116. Two papers, one on 'The Geol. of South Shrops.' by Profs. Lapworth and Watts in *Proc. Geol. Assoc.* vol. xiii (1894), p. 297, and another, 'A Sketch of the Geol. of the Birmingham District,' by Profs. Lapworth and Watts and Mr. W. J. Harrison, in *Proc. Geol. Assoc.* vol. xv (1898), p. 313, are indispensable.

TABLE OF FORMATIONS IN SHROPSHIRE (*continued*)

| Period | Formation | Character of the Strata | Approximate Thickness in Feet |
|---|---|---|---|
| Cambrian. . | Sheinton Shales . . . . . | Dark-blue shales, weathering yellow | 1,500 |
| | Comley Sandstone . . . . | Olive-green grits, flags, and shales, with limestone bands | 400 |
| | Wrekin Quartzite . . . . | White quartzite . . . . . | Up to 200 |
| Archaean. . | Western Longmyndian . . . | Red and purple conglomerates, grits, and slates . . . . . | 10,000 to 28,000 |
| | Eastern Longmyndian . . . | Grey and purple slates, shales, and grits . . . . . | |
| | Uriconian . . . . . | Ashes and lavas, and intercalated sediments | Several thousand ? |
| | Rushton Schists . . . . . | Schists . . . . . | ? |
| | Ercall Granitoidite and Primrose Hill Gneiss | Granitoid and gneissic rocks . . | |
| Of Various Ages | Intrusive Igneous Rocks: Dolerites, Basalts, Picrite, and Porphyrite | Crystalline igneous rocks | |

## ARCHAEAN

There are now known to exist in the county of Salop several distinct types of rocks of higher antiquity than the Lower Cambrian.

If the reader will turn to the accompanying geological map he will see that a number of isolated patches of 'felsite' are represented as emerging along a line of fault which enters the county near Newport on the north-east, and leaves it at Bucknell in the Valley of the Teme on the south-west. These patches represent the more extensive members of a chain of isolated hills or knolls consisting chiefly of ancient lavas, ashes, and intercalated sediments.

Parallel to this eastern chain, and some seven miles farther to the north-west, is another or western chain of several isolated and comparatively inconspicuous exposures of rocks which Dr. Callaway believes to be of similar age and origin: the most northerly, Pontesford Hill, is shown on the accompanying map; the others occur on a line extending thence in a south-westerly direction for about seven miles as far as Linley Hall, where the map shows the most southerly link of the chain as a mass of 'dolerite and gabbro.'

To these volcanic rocks and associated sediments the title *Uriconian* has been given by Dr. Callaway, from the name of the Roman town of Uriconium (now Wroxeter) situated a few miles west of the Wrekin.

A second type, consisting of metamorphic rocks, is exposed at two points on the Wrekin chain: *Granitoidite* at the Ercall, and *Gneiss* at Primrose Hill—the northern and southern extremities respectively of the Wrekin. On the map they are not separated from the 'felsites.'

A third type, the *Rushton Schists*, was discovered in 1884 by Dr. Callaway near the village of Rushton, between Uppington and Eaton Constantine. On the map they are not distinguished from the Cambrian.

To these three types of local pre-Cambrian rocks must probably be added a fourth—a great series of grey shales and red sandstones which constitute the plateau of the Longmynd. These *Longmyndian* rocks, which

extend from Haughmond Hill, north-east of Shrewsbury, to the neighbourhood of Craven Arms, are coloured on the map as pre-Cambrian 'gneiss and metamorphic' rocks; in no part of the series, however, do gneisses or metamorphic rocks occur.

We shall describe these various types in order, beginning with those which are possibly the oldest.

### Ercall Granitoidite and Primrose Hill Gneiss

In a quarry on the north-western slope of the Ercall Hill, there is an excellent exposure of a coarsely crystalline bright red felspathic granitoid rock, differing markedly from the Uriconian felsites or rhyolites which make up the south-western part of the hill. The nature of the granitoidite and its relations to the felsite with which it is in contact in the quarry are somewhat uncertain; Dr. Callaway[1] believes the two rocks to be faulted together, thus leaving their relative ages uncertain. Dr. Bonney[2] was at first disposed to regard the felsite as intrusive in, and therefore newer than, the granitoidite, which he thought might be a granitoid rock crushed by the intrusion of the felsite, or less probably, a metamorphosed grit. Professor Blake,[3] on the contrary, thought the granitoidite (eurite) might be intrusive in, and therefore newer than, the felsite, but admitted that this could not be definitely proved. There seems now a general disposition to regard the granitoidite as a true granite, older than the felsite, and to compare it in age and origin with the gneissose and schistose rocks of Malvern.

The northern part of Primrose Hill is a continuation of the Wrekin tuffs and rhyolites, but the bulk of the hill consists of gneissose and granitoid rocks, the latter being regarded by Drs. Callaway and Bonney as a re-emergence of the Ercall granitoidite. Professor Blake on the contrary regarded the granitoidite as intrusive in the felsites, and thought the associated schist and gneiss might be fragments of an older metamorphic series brought up from below by the intrusion.

Dr. Callaway records the presence of a red granitoid rock below the Uriconian breccias, grits, and felsites in the hills of Hope Bowdler and Cardington.

### Rushton Schists

In 1884 Dr. Callaway[4] announced the discovery of a new area of pre-Cambrian schists of a type till then unknown in England. They occur near the village of Rushton, and extend thence towards Charlton Hill. Sections are few and poor in character, but the rocks are described as exposed in a field about six furlongs to the west-north-west of Rushton. The tract is presumably separated from the Uriconian rocks of Charlton Hill by a fault. They consist of fine-grained quartzose mica-schist, and suggest to Dr. Bonney the characters of the newer gneisses of Scotland. Dr. Callaway remarks that if the rock is not merely gneiss crushed *in situ* it must be considered as a representative of a distinct Archaean group.

[1] *Quart. Journ. Geol. Soc.* xxxv (1879), 643. [2] Ibid. 662. [3] Ibid. xlvi (1890), 386.
[4] *Geol. Mag.* 1884, p. 362.

### Uriconian Volcanic Series

Allport,[1] of Birmingham, was the first to point out the truly volcanic nature of the eastern chain of these rocks, and to show by the microscope that they are ancient devitrified pitchstones in every way comparable with glassy lavas and ashes of the most recent geological periods. About the same time Dr. Callaway[2] worked out their true geological position and showed that instead of their having been intruded as 'greenstone' into the Wrekin Quartzite—at that time supposed to be Caradoc Sandstone baked and altered by the molten mass—they had in fact been poured out at the surface as lavas and ashes long before the quartzite (which proved to be Cambrian) was deposited over their edges.

Commencing our examination of these rocks at the northern extremity of the eastern chain of hills, we find them faulted up above the surrounding newer formations in Lilleshall Hill. This elevation is made up of a series of hornstones, ashy slates, and felspathic agglomerates, at least 1,500 ft. thick; some of the felspathic breccias contain fragments of Wrekin rhyolite. An interval of six miles then intervenes without any important exposures of Uriconian rocks, till we reach the Wrekin chain. We have already seen that the northern part of the Ercall consists of granitoid material, but the typical Uriconian rocks form the south-west part, and consist of grey and brown felstones which Dr. Callaway thinks are separated from the granitoidite by a fault. Lawrence Hill is mainly composed of rhyolite, but at the south-west end a large quarry affords a view of some felspathic tuffs (volcanic dust or ash) cut by three basaltic dykes of later date.

The Wrekin proper, the chief elevation of the chain, consists of an alternation of bedded agglomerates, ashes, and rhyolites, broken by a later intrusion of dolerite. The northern part of Primrose Hill is a continuation of the Wrekin rocks, but the bulk of the hill consists of the gneissose rocks already described.

Before proceeding farther to the south-west, to the Stretton Hills, we must turn aside to notice a low hilly tract of Uriconian felstones and breccias at Wrockwardine. At Flax Hill Quarry, south-west of the village, is to be found a variety of purple banded felstone which displays under the microscope a highly spherulitic structure; that is, the rock contains small globules or spherules having an internal fibrous radial structure, a characteristic stage in the devitrification of glassy lavas; and Allport[3] long ago described some beautiful examples of this and of the perlitic structure in the altered rhyolites of the Lea Rock at the south-west end of this Wrockwardine mass.

A little farther to the south-west the inconspicuous elevation of Charlton Hill, between Uppington and Eyton, presents points of special interest in that according to Dr. Callaway the tuffs of the northern part pass down on the south into a bed of conglomerate containing well-rounded pebbles of pebbly grit, quartzite, gneiss, mica-schist, and granitoid rocks, suggesting a derivation by aqueous action from a variety of still earlier rocks; and the same observer[4] points out that the occurrence of such pebbles indicates the

[1] *Quart. Journ. Geol. Soc.* xxxiii (1877), 449.
[2] Ibid. xxxv (1879), 643.
[3] Ibid. xxxiii (1877), 449.
[4] Ibid. xlii (1886), 481.

pre-existence of metamorphic rocks of three types: (1) coarse-grained gneissic and granitoid rocks like those at the Ercall, at Primrose Hill, and at Malvern; (2) quartzites, quartz-schists, and mica-schists; (3) altered grits of clastic origin; and he concludes that in the Shropshire area in times anterior to the Cambrian there existed in addition to the Uriconian volcanic series three groups of rocks displaying a close lithological resemblance to (1) the Hebridean and Malvernian gneiss; (2) the schists of Ireland, Sutherland, and Anglesey; (3) the altered grits of Anglesey and Ireland. Further: that all these Salopian rocks had undergone more or less metamorphism prior to the outburst of the later Archaean [Uriconian] volcanoes.

Professor Blake,[1] however, would not have it that the Charlton Hill conglomerates are part of the volcanic series, but regarded them as patches and relics of the later Western Longmyndian series.

Leaving this district and crossing the Severn, we next find the Uriconian series forming the well-known Caradoc Hills, near Church Stretton. The Lawley consists of tuffs and felstones at each end, with a central mass of intrusive greenstone. The better-known Caradoc Hill and its north-eastern spur, Little Caradoc, contain much greenstone intruded into the Uriconian shales, grits, ashes, and lavas. Some of these last show small amygdules or cavities occupied by an infilling of quartz, and probably originally gas bubbles in a lava-flow. Rocks of a similar character form the heights of Helmeth and Hazler, and make up an eastward extension in the hills of Hope Bowdler and Cardington, where the breccias, grits, and felstones overlie a red granitoid rock as already noticed. In Ragleth Hill, claystones and felspathic grits appear to predominate. Wartle Knoll, a mile west of Cheney Longville, near Craven Arms, consisting chiefly of quartz and felspar breccia, forms the most southerly member of the Uriconian exposures as far as Shropshire is concerned.

Crossing over now to the western side of the Longmynd, we must briefly examine the second or western chain of Uriconian exposures described by Dr. Callaway[2] in 1882.

Such of them as had previously been noticed had been regarded as bosses of intrusive greenstone, an opinion which Professor Blake[3] maintained in 1890. Sir A. Geikie[4] has more recently thrown out the suggestion that they may be a detached area of much newer volcanic rocks, possibly of Cambrian age.

At the northern end of Pontesford Hill there are good exposures of purple rhyolite, banded and spherulitic, which Dr. Bonney speaks of as a lava; intrusive basalt also occurs. At Lyd Hole, a ravine half-a-mile east of the northern end of the hill, the purple rhyolite is exposed, and by proceeding up stream towards the south-east, its junction with the Longmynd rocks may be examined just above a cascade; the actual junction Dr. Callaway believes to be a fault. Professor Blake, however, believed that Dr. Callaway's supposed rhyolite here is an intrusive rock which has altered the adjacent Longmyndian grit and shale, but Drs. Callaway and Bonney can find no evidence of such contact alteration. At Gatten Lodge are some exposures of compact argillite or hornstone of clastic origin; purplish hornstone and

[1] *Quart. Journ. Geol. Soc.* xlvi (1890), 386.
[2] Ibid. xxxviii (1882), 119.
[3] Ibid. xlvi (1890), 386.
[4] *The Ancient Volcanoes of Great Britain*, i, 129 (1897).

greenstone occur at Knolls Ridge ; purple hornstone and breccia at Cold Hill ; and greenish compact sedimentary rock like hornstone at Chittol. Still farther south, at Knolls Wood, occurs a clastic rock containing fragments of quartz and of reddish granitoid rock like the Ercall and Primrose Hill rocks. West of Linley Hall the exposures are chiefly of purple and green hornstone, which Dr. Bonney thinks may be an indurated somewhat altered tuff.

Dr. Callaway points out that in this western Uriconian axis purple rhyolites occur at the northern end, purple hornstones in the middle, and purple and green hornstones and indurated grits partly derived from a gneissic series at the south, and emphasizes the fact that no traces of granitoid or gneissic rocks, except as included fragments, are known to be present.

### Longmyndian

We must next turn our attention to the remaining great series of rocks which are now generally admitted to be of pre-Cambrian age, namely, the barren and as it would seem singularly unaltered sedimentary rocks of the Longmynd. They were described by Murchison [1] as exhibiting a continuous succession from east to west ; Salter [2] considered that there was a continuous upward passage westward into the Lingula Flags (now known to be Sheinton [Tremadoc] Shales), and the Geological Survey adopted this interpretation with the exception that towards the north the western limit of the Longmynd rocks is represented on the map [3] as a fault.

The beds naturally group themselves into two divisions, an Eastern Series of grey shales, slates, and flagstones, which are well exposed in the hills bordering the western side of the valley of Stretton, and a Western Series of red sandstones, grits, and conglomerates, which occupy the western uplands. Till recently they have all been regarded as typically Lower Cambrian (Harlech), but in view of their possible pre-Cambrian age they have been united by Dr. Callaway under the title Longmyndian. Professor Blake,[4] however, in 1890 argued that the Western Series, which he assigned to the Lower Cambrian, is unconformable to the Eastern Series, which he relegated to his Monian System of the pre-Cambrian, while Dr. Lapworth [5] has suggested as a working hypothesis that the Western Series may be contemporaneous with the eastern Uriconian series.

The general dip of the rocks is at a high angle towards the west-north-west, except locally near Pontesford Hill, where it appears to be in the opposite direction ; the various minor subdivisions consequently strike from north-north-east to south-south-west. The aggregate thickness, in the absence of repetition by folding and faulting, has been variously estimated at 3 miles (Blake), and at 23,000 to 28,000 feet (Geological Survey sections) ; but if the beds are folded, as implied by Dr. Callaway, the thickness would be reduced to perhaps 10,000 ft. The generally uniform westerly dip, and the evidence of the rain-spots and supposed annelid burrows, seem to prove that the upward succession is from east to west.

[1] *Silurian System*, 1839.
[2] *Quart. Journ. Geol. Soc.* xii (1856), 246, and xiii (1857), 199.
[3] Sheets 61 NW. and SW.
[4] *Quart. Journ. Geol. Soc.* xlvi (1890), 386.
[5] In *The Building of the British Isles*, by A. J. Jukes-Browne ; (Ed. 2, 1892), 27.

A few dykes and bosses of intrusive dolerite occur ; they are possibly connected with the post-Silurian intrusions of the Shelve and Breidden districts,[1] but no contemporaneous volcanic rocks are known to be present.

Professor Blake subdivided the whole of the Longmyndian as follows, in descending order :—

| | |
|---|---|
| Western or Red Series 'Lower Cambrian' (Blake) | 10. Grit<br>9. Hard purple slate<br>8. Grit<br>7. Conglomerate<br>6. Grit |
| Eastern or Grey Series 'Upper Monian' (Blake) | 5. Purple slates and grits<br>4. Hard greywacké<br>3. Purple slate<br>2. Banded group<br>1. Dark thin shale |

The Eastern Longmyndian thus consists of various coloured slates and grits, and greywackés of varying hardness and coarseness. Irregular bands of hard grit are present in all the subdivisions, and beds of purple slates occur in several. The lowest beds are well exposed in quarries at Church Stretton ; the banded group (2) may be studied at Minton Batch, and the hard greywacké (4) is laid bare in Carding Mill Glen. It was in this Eastern Series that Salter[2] found what he believed to be organic remains, namely, a trilobite from Callow Hill, which he named *Palæopyge Ramsayi*, and another, *Dikelocephalus*, as well as annelid burrows, which he named *Arenicola didyma* and *A. sparsa*, at the Light Spout waterfall, in Oakham Dingle, and on Yearling Hill ; and he found abundant examples of rain-spots, sun-cracks, and ripple-marks. But Professor Blake, in reviewing the question, decided against the organic origin of the supposed trilobites, and concluded that their peculiar form is inorganic and accidental ; at the same time, however, he discovered what look like annelid castings on the surface of one of Salter's specimens, and he himself found impressions of Lingulæ near Church Stretton gas-works.

The Western Series consists chiefly of reddish grits and conglomerates with an intermediate thick band of hard purple slate. Professor Blake confirmed Dr. Callaway's observation that pebbles of volcanic rocks are present in the conglomerates, and remarked that the conglomerate at Haughmond Hill is obviously derived from the detrition of the volcanic rocks of the Wrekin. The lowest grit (6) contains small fragments of purple slate ; the conglomerate (7) is very well marked in the southern part of the district and again at Haughmond Hill. The slates (9) form a band of nearly vertical rocks 2 miles broad in the southern part of the area, but thin out northward towards Longden. The upper grit (10) is similar to those farther east (6 and 8), and contains sporadic beds of conglomerate chiefly of quartz pebbles.

No one appears to have called in question the regular and conformable junction of these two great Longmyndian series—the Eastern and the Western—till Professor Blake in 1890 argued that the junction is highly

[1] Lapworth and Watts, *Proc. Geol. Assoc.* xiii (1894), 297. See p. 335.

[2] *Quart. Journ. Geol. Soc.* xii (1856), 246 ; ibid. xiii (1857), 199.

unconformable, and he based this conclusion on the alleged irregular junction of the grit (6) with the beds below, on the overstep of this grit on to various members of the Eastern Series, and on the presence of supposed outliers of the grit on bed 4 at Narnell's rock, and on bed 5 near Colliersley. He also discovered what seemed to be inliers of bed 5 in the areas occupied by the grits and conglomerates (6–8), and evidences of unconformity in Minton Batch. He further contended that most of the exposures of red conglomerates and grits described by Dr. Callaway as intercalated in the Uriconian Series, as, for instance, at Charlton Hill, at Caer Caradoc, and at Cardington, are outlying relics of the Western Longmyndian grits and conglomerates. He thought that the eastern Uriconian materials were extruded through the Eastern Longmyndian Series before the Western Longmyndian beds were deposited, and he did not admit the existence of a western chain of Uriconian volcanic rocks. Professor Blake's version of the probable succession of events is thus admirably summarized by Dr. Lapworth and Professor Watts[1] :—

1. Formation of Rushton Schists [? Middle Monian].
2. Deposition of Eastern Longmyndian rocks (Upper Monian).
3. Extrusion of Uriconian volcanic rocks.
4. Deposition of Western Longmyndian (Lower Cambrian).
5. Deposition of the Wrekin Quartzite (*Olenellus* zone).

Dr. Callaway cannot agree to these conclusions, chiefly on the following grounds :—

1. He finds no evidence of the extrusion of the Uriconian volcanic series through the Eastern Longmyndian.
2. Neither he nor Dr. Bonney can find any evidence of the contact-alteration of the Longmyndian grits alleged by Professor Blake at Pontesford Hill, and the grit itself (No. 10 of Blake's subdivisions) contains pebbles of the Uriconian volcanic rocks.
3. He can find no proofs of unconformity at Narnell's Rock, but evidence of continuous sedimentation.
4. Pebbles of volcanic rocks occur in the Eastern Longmyndian rocks.
5. Professor Blake's alleged shreds and patches of the Western Longmyndian grits lying on the eastern volcanic hills seem to Dr. Callaway to be interbedded in the volcanic series.

It is thus evident that much more work of a highly detailed character remains to be done before many of these problems can be solved.

We must now proceed to reconstruct from the foregoing details some account of the succession of events which resulted in the laying down of these foundation stones of the future county of Salop.

The gneissose and granitoid rocks of the Ercall and Primrose Hill, and the Rushton schists, in themselves tell us little, but assuming that Dr. Callaway is correct in his contention that these can be paralleled in a general way with the Malvernian and Lewisian gneisses and the schists of Anglesey and Ireland, we must suppose that they represent ancient sediments or igneous rocks which have subsequently been highly metamorphosed. Whatever may have been the exact nature of the rocks from which these gneisses and schists were produced, it is clear that the metamorphic processes had brought about their full effect even before the Uriconian volcanoes spread their lavas and ashes over the district, for we have seen that pebbles of several varieties of metamorphic rocks occur in the Uriconian conglomerates of Charlton Hill.

[1] *Proc. Geol. Assoc.* xiii (1894), 297.

Further, not only were tracts of gneissic, schistose, and granitoid rocks in existence somewhere in the neighbourhood, but associated with these were exposures of quartzites and altered grits of detrital origin.

Such are the rocks which formed the land—possibly an archipelago of small islands—somewhere in our neighbourhood, when later the Uriconian volcanoes began their long series of eruptions. The Wrekin itself appears to present us with a section of one of the actual cones from which lava-flows, alternating with showers of finer or coarser ashes, were poured forth into the neighbouring waters and over the adjacent land. Much of this volcanic material was subjected forthwith to the detrital action of water, either as sea-waves beating along a line of shore, or as rapid streams descending the rugged slopes of the cones. Some islands or cliffs there must have been of the older altered sediments and gneissose rocks.

After a protracted activity the volcanoes became extinct, and a new set of conditions arose. If Dr. Callaway is right in placing the Uriconian rocks below the whole of the Longmyndian, we must suppose that in the neighbourhood there was inaugurated a quiet deposition of fine muds, varied by occasional deposits of sandy material, and giving rise to the Eastern Longmyndian Series. Later on, coarser grits and conglomerates—the Western Series—were deposited. As Dr. Callaway[1] points out,

> these sediments show that the adjoining lands were partly built up of granitic, volcanic, and metamorphic rocks. The purple conglomerates and sandstones of the Longmyndian, reaching a thickness of several thousand feet, are largely derived from the rhyolites of the Uriconian, and indicate the proximity of an extensive land area. Rounded fragments of granitic and schistose rocks are not uncommon in the conglomerates, while the grains of quartz and felspar in the grits have probably the same origin. These grits grow less felsitic towards the south, and fragments of metamorphic rocks increase in number—indications which suggest the conclusion that the Malvern Hills are a worn fragment of a mass of land which made a conspicuous feature in the Longmyndian ocean.

## CAMBRIAN

The steady subsidence of the sea-floor must have proceeded for ages in order to accommodate the thousands of feet of sandstones and grits which make up the Western Longmyndian Series. At length, however, a new set of conditions was inaugurated which ushered in the earliest formations of the Cambrian System, and introduced in Shropshire the first group of unequivocal organisms. But concerning the events which intervened between the deposition of the uppermost Longmyndian grits and the laying down of the lowest local Cambrian quartzites our records are completely silent. A line of fracture appears to separate the Longmynd area from the Sheinton Shales (Cambrian) on the west, and on the east the Wrekin Quartzite is apparently faulted against the Uriconian Series, so that possibly some important links in the chain are missing. Generally wherever in other districts the base of the Cambrian can be detected these rocks are found to rest on an old and uneven surface of the pre-Cambrian formations and to contain water-worn fragments produced by their detrition. In Shropshire no such normal base has yet been detected ; but judging from what occurs

[1] In *The Building of the British Isles*, by A. J. Jukes-Browne (Ed. 2, 1892), 27, 28.

in other districts we may reasonably infer that after the Longmyndian sediments had been laid down there may have ensued a certain amount of elevation and disturbance, and it is possible that the Longmynd area was upraised above the Cambrian waters and for a time formed a land-tract. Be this as it may, it seems certain that at the time that the Wrekin Quartzite was being laid down as a shallow-water deposit some of the Uriconian volcanoes still remained above sea-level, and by their gradual degradation yielded débris which mingled with the early Cambrian sediments.

A reference to the accompanying map will show that the Cambrian rocks rise to the surface at Lilleshall as a small faulted patch wedged in between the Uriconian and Trias on the west and the Carboniferous on the east. They reappear farther south, wrapping round the Uriconian cores of the Wrekin and Charlton Hill, and extending beyond the Severn as far as Acton Burnell Park ; they fringe the volcanic rocks of the Caradoc Hills near Church Stretton, and finally come out as a long narrow strip bordering the western side of the Longmynd, from which they are probably faulted.

The rocks consist of the following subdivisions :—

3. Sheinton Shales
2. Comley Sandstone
1. Wrekin Quartzite

The quartzite and sandstone were formerly supposed to be Caradoc Sandstone (Ordovician) baked by the supposed intrusive greenstone (now known to be Uriconian lavas), while the Sheinton Shales were confused with the Harnage Shales (Caradoc) ; west of the Longmynd, however, the same Sheinton Shales were mapped as Lingula Flags.

Dr. Callaway,[1] in 1877, remedied these erroneous conceptions by a careful and detailed study of the district, and showed that the sandstone and shales contain a well-marked and rich collection of organisms, many of which were new, others being comparable with those known to characterize the Tremadoc Shales of North Wales, and the Hollybush Sandstone and Black and Grey Shales of Malvern, which had previously been determined to be of Upper Cambrian age.

The Wrekin Quartzite is a remarkably pure deposit of quartz sand firmly compacted by a cement of secondary silica. Towards its base it contains small more or less rounded fragments of the Uriconian volcanic rocks against which its rests ; at its actual junction, however, it is frequently brecciated, which suggests that along the flanks of the Wrekin the two are separated by a fault. It wraps round the Uriconian inliers of the core of the Wrekin, and at the north-east end of the Ercall is about 200 ft. thick. It similarly surrounds the exposures at Charlton Hill, reappears at the south-west end of the Lawley and on the south-east of Caer Caradoc, where it is 100 ft. thick ; finally it forms a ridge known as the Sharp Stones, south-west of Cardington, dipping away from the Uriconian rocks on which its rests. West of the Longmynd it is presumably cut out by a fault.

The only fossil yet found in it is a worm-burrow, obtained by Dr. Callaway near a cottage on the south-east flank of the Wrekin, and named by him *Arenicolites uriconiensis*.

[1] *Quart. Journ. Geol. Soc.* xxxiii (1877), 652 ; ibid. xxxiv (1878), 754.

The quartzite passes upwards into the Comley Sandstone—a thin-bedded greenish micaceous rock identified with the Hollybush Sandstone of Malvern and the Middle Lingula Flags of Wales. It is best exposed at Comley, between Lawley and Little Caradoc ; it here contains a bed 1 ft. thick of dark compact limestone, which yielded to Dr. Callaway the brachiopod *Kutorgina cingulata*, in addition to some indeterminable trilobite remains. It is here 300 to 400 ft. thick. Dr. Callaway records that at Neves Castle at the south-west end of the Wrekin *Kutorgina cingulata* is abundant, and that the sandstone occurs as an inlier at Lilleshall, where it is exposed in the road through the village.

Peculiar interest attaches to the thin limestone bed at Comley, for it was this rock which yielded to Dr. Lapworth [1] in 1885 fragments of *Olenellus*, the oldest known genus of trilobites, previously discovered in America and on the continent of Europe, but thitherto unrecognized in the British Isles. Associated with *Olenellus Callavei* are *Kutorgina cingulata* and the pteropod *Hyolithellus*. In somewhat higher beds is a second calcareous band in which Professor T. T. Groom in 1891 found a recognizable *Paradoxides* (*P. Groomi*), the characteristic genus of the Menevian or Middle Cambrian ; associated with this trilobite are *Ptychoparia*, *Obolella*, and *Protospongia*.

These discoveries of the characteristic zonal fauna of the Lower and Middle Cambrian finally established the thesis that all the Shropshire rocks of earlier date than the Wrekin Quartzite are of pre-Cambrian age, as had been previously claimed by Dr. Callaway.

The Comley Sandstone is succeeded by the Sheinton Shales which occupy an area extending from the neighbourhood of Wellington as far as Acton Burnell ; they are faulted against various older and newer formations on the north-west. On the west of the Longmynd they extend as a long strip of low ground along the course of Habberley Brook between the Longmynd and the Stiper Stones. They consist of dark-blue shales weathering to an olive or yellow colour ; they are more or less micaceous, thin-bedded, soft, and contain occasional calcareous nodules. Their thickness is estimated by Dr. Callaway as at least 1,500 ft.

Formerly these shales as exposed at Sheinton had been wrongly identified with others of Caradoc age exposed at Harnage, and both were set down as part of the Caradoc formation, an error finally corrected in 1877 by Dr. Callaway, who showed that the Sheinton beds contain an abundant fauna among which occurs *Olenus*, the trilobite genus characteristic of the fauna of the Upper Cambrian (Lower Tremadoc) beds of North Wales and the Dictyonema grey shales of Malvern.

Exposures of the Shales may be examined between the Wrekin and the Severn in Mary Dingle and Back Dingle, where they yield the hydrozoan *Dictyonema sociale ;* the highest and most fossiliferous beds are laid open in Belswardine Brook. Forms of *Bryograptus* occur in the middle beds, and in the highest many genera and species of the trilobites *Asaphus* and *Olenus ;* but according to Professors Lapworth and Watts [2] no trace of the Lingula Flags has yet been detected in the Wrekin district unless they are represented in part by certain Dictyonema shales apparently at the base of the Sheinton Series near Caer Caradoc.

[1] *Geol. Mag.* 1888, p. 484 ; ibid. 1891, p. 529. [2] *Proc. Geol. Assoc.* xv (1898), 313. See p. 337.

Belswardine Brook has yielded the following fossils in addition to those already mentioned :—Various genera and species of trilobites such as *Conocoryphe monile*, *Asaphellus* and *Platypeltis;* the brachiopods *Obolella Sabrinae* and *Lingulella Nicholsoni;* the pteropod *Theca*, and the graptolite *Dendrograptus*.[1] The Rev. J. D. La Touche mentions other exposures of the Sheinton Shales as good fossil localities : e.g. a dingle near Garmston and Eaton Constantine, Bull Hill Cottage near Evenwood, and the ravine between the Lawley and Hoar Edge ; while on the west of the Longmynd fossils may be found below Gittins Hay and on the hill west of Habberley.

At Madox's Hill an intrusive dyke of porphyrite is exposed in a cutting on the road leading from the Hatch to the Wrekin ; it is intrusive in the Sheinton Shales, which it has altered and hardened, but it does not affect the uncomformably overlying Carboniferous rocks. The rock is red, variegated with greenish patches, and is made up of porphyritic crystals of felspar set in a finer crystalline matrix of felspar and hornblende.[2] Its age is post-Cambrian and pre-Carboniferous.

With regard to the geographical disposition of land and sea in Cambrian times little can be said with certainty.[3] The apparent non-existence of Cambrian deposits in Ireland and in the south of Cornwall, and again in Normandy and Brittany, may be explained by supposing that the main land-tract lay over what is now the west and south-west of Great Britain ; and the thinning of the Cambrian sediments as they are traced from Wales eastward across Shropshire and Warwickshire, and the correlative decrease in the coarseness of the materials, point to the same conclusion. Over the site of the future Shropshire half-submerged cones of the Uriconian volcanoes, and perhaps the recently upraised Longmyndian rocks, may have formed an archipelago, for the lower beds of the Wrekin Quartzite contain some débris from the Uriconian rocks ; but a slow submergence of the whole area is evidenced by the gradual change from the pebbly coarse sands of the Wrekin and Comley beds to the fine muds forming now the Sheinton Shales.

## ORDOVICIAN

The depression which led to the deposition of the Cambrian sediments continued during the earlier portion of the succeeding Ordovician period, and there is evidence that towards the close the sea extended over nearly the whole of England and Wales with the exception perhaps of the English Midlands, where Ordovician rocks are not known to be present. Their absence may be due to one of two causes : either they were never deposited, owing to that area having stood up as an island in the Ordovician sea, or some were deposited and subsequently worn away during the period which more immediately preceded the deposition of the Silurian rocks. The former supposition is the more probable, however, for the whole of the Ordovician rocks are represented in that part of Shropshire which lies west of the Longmynd, but in the Caradoc district to the east only the uppermost or Caradoc subdivision is present, consisting of sandy

[1] Callaway, *Quart. Journ. Geol. Soc.* xxxiii (1877), 652 ; Lapworth and Watts, *Proc. Geol. Assoc.* xiii (1894), 297. See p. 311.

[2] Lapworth and Watts, *Proc. Geol. Assoc.* xiii (1894), 297. See p. 336.

[3] See A. J. Jukes-Browne, *The Building of the British Isles* (Ed. 2, 1892), chap. ii.

deposits resting with a conglomeratic base on the Cambrian rocks, and still farther in the same direction, as at Malvern and the Lickey in Worcestershire, the Silurian rocks rest directly on the Cambrian, and the Ordovician is entirely unrepresented. This overlap or successive greater horizontal extension of the beds as we ascend the sequence furnishes evidence of the close proximity of land on the east of the Caradoc district, and this land must have presented a steeply shelving westerly slope. It was doubtless formed of recently upheaved Cambrian and possibly in part of Archaean rocks. How far this presumed island extended is uncertain, but it probably included the site of what are now the Malvern and Lickey Hills, the Nuneaton district in Warwickshire, and Charnwood Forest in Leicestershire, for in none of these areas has any trace of Ordovician rocks been detected.

On the accompanying map the term 'Lower Silurian' is retained for the Ordovician rocks. They come to the surface in three distinct areas: (1) the Breidden Hills on the north-west, (2) the Shelve district in the middle, and (3) the Caradoc district on the south-east.

The rocks consist of a series of grits, sandstones, and shales, with interbedded volcanic ashes and lavas, and into these some sills and dykes of dolerite and picrite have been since intruded. The three subdivisions of the Ordovician rocks—Arenig, Llandeilo, and Bala—as developed in Wales are all present to the west of the Longmynd, but the Caradoc or Bala alone is found to the east.

### The Breidden District

The Breidden Hills, 12 miles west of Shrewsbury, lie almost wholly beyond the limits of our county. The rocks were described by Murchison, but have since been studied in greater detail by Professor Watts.[1] The hills take the form of three main ridges of igneous rocks trending north-east and south-west, and separated by intermediate hollows occupied by shales of Bala age. On the accompanying map the three igneous ridges are coloured as 'andesite,' but the two westerly ones, which are of diabase, should have been given the darker colour of 'dolerite and gabbro.'

The rocks consist in the lower part of a series of barren dark-grey and black shales—the Criggion Shales—monotonous in character and apparently devoid of fossils; they are about 2,700 ft. thick. At about 800 ft. above their base they contain a single grit band 20 ft. thick. Sections occur in a little brook rising between Bulthy and Bausley Hills and joining Belleisle Brook.

Above the Criggion Shales follow the Bulthy Ashes—beds of ashes and flows of andesitic lava, with conglomerates and grits; on account of their superior durability they stand out as a ridge, of which the chief summits are Moel-y-Golfa (1,324 ft.), Middletown Hill, and Bulthy and Bausley Hills. Typical sections of these Bulthy Ashes are afforded by a road-cutting between Bulthy and Bausley Hills, and on the northern crag of Bausley Hill. In this last-named elevation shales and ashy grits are intercalated among the conglomerates. In Middletown Hill conglomerates and ashes are present, and the latter have been quarried for china-stone. On Moel-y-Golfa the lowest

[1] *Quart. Journ. Geol. Soc.* xli (1885), 532.

beds are andesitic lavas, which form great crags at the south-west end of the hill and are about 400 ft. thick; they are followed by ashes and conglomerates. Professor Watts[1] concludes that

> the centre of volcanic activity was at Moel-y-Golfa, where the lavas occur and near to which the ash beds are thickest, while further north the area was for the most part submerged, becoming occasionally shallow for the formation of conglomerates and even at times upheaved to receive the ashes.

The Bulthy Ashes are followed by the Bausley Beds, which consist of shales alternating with sandy beds and ashy grits containing graptolites, shells, and trilobites; exposures occur at a farmyard at the northern end of Bausley Hill. The Bausley Beds pass upwards into unfossiliferous shales with grit bands, and these are overstepped by the unconformable Silurian beds of the Long Mountain.

The fossils indicate that the beds are referable to the lower part of the Bala beds, and that they may be paralleled with the Aldress mudstones and Hagley Ashes of the Shelve region.

These shales and interbedded ashes have subsequently been pierced by two intrusive sills and several dykes of diabase which, like the ashes and lavas, stand out in parallel ridges; that on the north-west, Breidden Hill, attains an elevation of 1,202 ft., and is crowned with Rodney's Pillar; that on the south-east is known as the Criggan. The intrusive character of the diabase may be seen in a small tributary of Belleisle Brook, where a small patch of shale has been caught up in the igneous rock, while elsewhere the shales are baked red, hardened, and altered. Professor Watts thinks the intrusions are probably of post-Silurian—perhaps of Old Red Sandstone—age.

## The Shelve District

The Ordovician rocks of the Breidden Hills dip steeply to the south-east under the Silurian rocks and reappear as a tract of hilly country round Shelve. The beds have been described by Murchison and G. H. Morton, and have since been studied in great detail by Professors Lapworth and Watts. The following table shows the subdivisions of the Ordovician rocks of the Shelve and Caradoc districts as worked out by Professors Lapworth and Watts.[2]

The Ordovician Rocks of Central Shropshire

| | Shelve | | Caradoc | |
|---|---|---|---|---|
| Bala or Chirbury Series | Whittery Shale | Marrington Group | | Onny Trinucleus Shales |
| | Whittery Ash | | | Acton Scott Beds |
| | Hagley Shale | | | Longville Flags |
| | Hagley Ash | | | Chatwall and Soudley Sandstones |
| | Aldress Shale | Spy Wood Group | | Harnage Shales |
| | Spy Wood Grit | | | Hoar Edge Grit and Limestone |
| Llandeilo or Meadowtown Series | Rorrington Flags | | | |
| | Middleton Calcareous Series | | | |
| | Weston Group | Grit | | |
| | | Shale | | |
| | | Grit | | |
| | | Shale | | |
| Arenig or Shelve Series | Stapeley Ash | | | |
| | Hope Shales | | | |
| | Mytton Flags | | | |
| | Stiper Quartzite | | | |

[1] Op. cit. 535, 536.

[2] *Proc. Geol. Assoc.* xiii (1894), 297. See p. 316.

In the Shelve area the lower subdivisions of the system are developed more fully than elsewhere in our county.

The Arenig or Shelve Series is introduced on the west of the valley of Habberley by the ridge of the Stiperstones Quartzite ; the rock stands up as a line of mural crags some 10 miles in length and extending from Pontesbury to Sneyd, overlying the Sheinton Shales already described. The quartzite consists of quartz-grains cemented into a hard rock by secondary silica. It has yielded some worm-burrows and traces of *Lingulae*. The Rev. W. S. Symonds[1] observes that at Nills Hill near Pontesbury the beds are ripple-marked, contain worm-tubes, and have been quarried for road-stone.

The Stiper Quartzite is followed by the Mytton Group of shales with bands of grit and flags ; this forms the principal lead and zinc mining ground, and is displayed in Mytton Dingle and Perkin's Beach.

The Hope Shales contain some ash-beds, but these come on more fully at the close of the Arenig period and constitute the Stapeley Ashes, which can be regarded as the approximate equivalents of the great Arenig ashes and lavas of North Wales. They are andesitic breccias and ashes, and since they frequently contain beds of fossiliferous shale it is evident that they were deposited in water.[2] These ashy beds form the principal ridges in the Shelve district ; they dip in a westerly direction in the Ritton Castle and Cefn Gwynlle ridge, rise again with easterly dip in the ridge extending from Round Hill near Shelve to Hyssington, and finally turn over in an arch and come to ground again in the western ridge of Bromlow Callow, Stapeley, and Roundtain, where they plunge under the Llandeilo or Meadowtown Series. Associated with the ashes in the southern part of the district west of Hyssington are andesitic lava-flows which largely make up the hills of Simmond's Castle, Todlethr, the Roundtain, and Lanfawr.

The Llandeilo or Meadowtown Series succeeds, and the lowest subdivision, the Weston Group, consists of shales with two marked bands of volcanic grit ; the Middleton Group is introduced by shales and flags containing the graptolite *Didymograptus Murchisoni ;* they pass upwards into flags and limestones with the trilobites *Ogygia Buchi*, *Asaphus tyrannus*, and *Trinucleus Lloydi*, which come on at Middleton Church and Meadowtown ; finally the Rorrington Flags, a group of black graptolitic mudstones containing *Coenograptus gracilis* and *Leptograptus flaccidus* close the local Llandeilo Series.

The Caradoc, Bala, or Chirbury Series is introduced by the Spy Wood Group, a set of calcareous grits and flags in which the small ostracod *Beyrichia complicata* is abundant ; these are followed by the Aldress Shale, with many specimens of *Dictyonema*. The Marrington Group consists of the Hagley Ash, followed by the Hagley Shales ; next comes the Whittery Ash, exposed in Whittery and Walkmill quarries ; finally the Whittery Shales come on between Marrington and Chirbury, and are unconformably covered by the Silurian rocks of the Long Mountain. The whole of the beds from the Middleton limestones upward may be seen in the Spy Wood section and its continuation in Marrington Dingle.

[1] *Records of the Rocks* (1872), 91.

[2] Lapworth and Watts, *Proc. Geol. Assoc.* xiii (1894), 297. See p. 317.

The Ordovician rocks of the Shelve area, in addition to the interbedded ashes and lavas, which were poured out from volcanic centres or from submarine vents into the adjacent seas, contain also a number of sills and dykes of dolerite intruded into them at a later date, and as these intrusions affect the Pentamerus limestones they are certainly later than the Upper Llandovery.

The most interesting of these intrusions is the great dolerite mass of Corndon. It was formerly supposed to have been intruded as a great jagged cone or pyramid broadening out below; but Professor Watts[1] recognized in it the characteristic laccolite structure previously described by American authors, but not thitherto known in Britain. The distinctive feature of a laccolite is its lens-like form; the igneous material, being forced up one or more vertical pipes or fissures, on encountering a more resistent stratum bulges this up and spreads out laterally more or less parallel to the bedding and thins out to a knife-edge all round. Proofs that the Corndon dolerite assumes this form and not that of a conical boss may be seen on the east and south-east sides, where the altered shales conformably underlie the dolerite of the overhanging crags.[2]

### The Caradoc District

Here we have no Ordovician rocks of earlier date than the Caradoc or Bala Series, but higher beds are seen here than at either Breidden or Shelve; they extend from the Severn Valley at Cound as far as the neighbourhood of Craven Arms. They were described in some detail by Salter and Aveline[3] in 1854, and subsequent investigators have confirmed the general accuracy of their conclusions.

The Hoar Edge Grits are conglomerates, grits, and impure limestones; the pebbles in the first are quartz, red jasper, and green earthy material. The beds are well exposed at Corston, near Aston-on-Clun, and farther north they form a ridge extending from Carwood by Horderley, where they are calcareous and yield good building-stones, to Hope Bowdler, where they rest unconformably on and contain fragments from the Uriconian rocks. They reappear east of Caradoc and form the conspicuous escarpment of Hoar Edge, where they are exposed in quarries, dipping away at high angles from the Uriconian rocks on the west. Thence they continue by Frodesley to the bold escarpment of Shadewell Coppice and finally disappear under the base of the Silurian south of Harnage Grange. In this neighbourhood they contain a band of impure limestone; the fossils include trilobites such as *Calymene Blumenbachi* and *Trinucleus concentricus*, and various species of *Orthis* and *Strophomena*.

The Harnage Shales are fine thin-bedded argillaceous strata; they are exposed at Broomcroft near Kenley, near the Devil's Causeway under Chatwall, and in the valley between Hoar Edge and Enchmarsh. They are succeeded by the Chatwall Sandstones, thick-bedded, often pebbly, and brown and olive-green in colour; the beds have been extensively quarried at Soudley, Horderley, and Long Lane near Craven Arms. Exposures of the succeeding Cheney Longville Flags occur in a lane west of that village; they

[1] *Rep. Brit. Assoc.* 1886, p. 670.
[2] Lapworth and Watts, *Proc. Geol. Assoc.* xiii (1894), 297. See pp. 341–3.
[3] *Quart. Journ. Geol. Soc.* x (1854), 62.

are a great series of flags and sandy shales, and are followed by the dark grey shales with bands of concretionary limestone which constitute the Acton Scott Beds.

The succeeding Onny Shales form the highest known Ordovician beds of Shropshire. They are sandy shales of a yellow, brown, or slate colour, and are peculiarly rich in the trilobite *Trinucleus concentricus*. They are exposed in the Onny river as a low cliff on the left bank, 300 yds. above the foot-bridge to Cheney Longville, and dip east at 20 deg. Any possible higher Caradoc beds are concealed by the unconformable Silurian rocks.

The Ordovician rocks thus tell us of a period of great volcanic activity and give us glimpses of a sea liable to irruptions of igneous materials. The subsidence which set in in Lower Cambrian times continued till the deposition of the Caradoc Sandstones began, when a reversed movement commenced, so that portions of the sea-floor were brought up as ridges and islands, of which the Longmynd and Malvern probably formed parts. Elsewhere the Lower Llandovery rocks were being deposited, but the Shropshire area was not submerged till the Upper Llandovery beds were laid down; but even then the Longmynd and Shelve areas must have stood up amid the waters of the sea as a bold and rocky islet, from the waste of which much of the material of the Upper Llandovery beach-rock (May Hill Sandstone) was derived. This sandstone wraps round the west, south, and east of the old island, and similar patches of beach-rock at higher levels on the Longmynd show that the island was not submerged probably till Ludlow times.

## SILURIAN

The geological map shows that the Silurian (Upper Silurian) rocks occupy the surface of the county in two great districts, namely (1) the Long Mountain and Clun Forest west and south of the Longmynd, and (2) the long narrow strip extending south-westwards from Much Wenlock to Ludlow; besides these there are small inliers between Broseley and Bridgenorth, and at Neen Sollars on the south-east borders. Traced from north-west to south-east the rocks are found to undergo a gradual change from a sandy and shaly type to a highly calcareous type, at the same time that a diminution in the thickness of the upper beds takes place.

The main subdivisions and their wonderful assemblages of fossils were long ago described by Murchison in his work on *The Silurian System*. They are grouped by Professors Lapworth and Watts[1] as follows:—

SILURIAN ROCKS OF SHROPSHIRE

| | Wenlock and Ludlow Area | Long Mountain |
|---|---|---|
| Ludlow Series | Passage Beds and Downton Sandstone | Passage Beds |
| | Upper Ludlow Rocks | Cardiola Beds |
| | Aymestrey Limestone | Hard Flags |
| Wenlock Series | Lower Ludlow Rocks | Mudstones and Flags |
| | Wenlock Limestone | Concretionary Mudstones |
| | Wenlock Shales | |
| Llandovery Series | Tarannon Shale | Purple Shales |
| | Upper Llandovery Rocks | Llandovery Sandstone |
| | (Lower Llandovery absent) | |

[1] *Proc. Geol. Assoc.* xiii (1894), 297. See p. 321.

### Llandovery Series

The Lower Llandovery rocks are absent in Shropshire ; the earliest deposits of the Upper Llandovery are the Basement Beds or May Hill Sandstone, an impersistent band of conglomerates and coarse grits which were laid down as a shore-deposit wrapping round the older land-masses and unconformably passing over the edges of all the earlier formations. The characteristic May Hill Sandstone fossils include *Monograptus Sedgwicki*, *Petraia bina*, *Pentamerus oblongus*, and *Stricklandia lens*.

In the Long Mountain district these beach-rocks crop out at intervals around the edge of the Silurian rocks. Professor Watts [1] discovered certain greenish-brown mudstones and soft sandstones, with characteristic Mayhill Sandstone fossils, on the flanks of Middletown Hill, where the Silurian rocks overstep the Bala beds of the Breidden Hills, while farther south they occur at intervals between Pontesbury and Chirbury, and again farther south at Norbury, Mindtown, and Little Stretton. Several small outliers of similar, but probably higher—possibly Wenlock—beds are to be found on the Ordovician rocks at Bog Mine and Venus Bank, near Shelve. Farther east they fringe the base of the Silurian to the east of Cardington and continue northwards, stepping from one division to another of the underlying Caradoc Series and forming an abrupt escarpment at Church Preen, Kenley, and Gibbon's Coppice south of the Wrekin, beyond which point they plunge under the Carboniferous rocks.

Locally the upper beds of these sandstones are so highly charged with fossils, especially the brachiopod *Pentamerus oblongus*, as to become an impure limestone; this calcareous modification occurs, according to Professor Lapworth, to some extent to the north of Shelve, and limestones at this horizon are shown on the Geological Survey map at Snead, Norbury, Mindtown, at the Onny section near Wistanstow (figured by Salter and Aveline [2]), and thence almost continuously as far as the Severn ; while Professor Lapworth records similar rock as present at Morrell's Wood south of the Wrekin. The sandstones and limestones yield abundant specimens of the trilobites *Encrinurus punctatus* and *Phacops caudatus*, and the brachiopods *Pentamerus oblongus*, *P. undatus*, and *Stricklandia lens*.

The Pentamerus Beds pass upwards into the Tarannon Shales, generally purple, red, and greenish, in which few fossils are to be found ; such as are present are of Wenlock species. They have been recognized by Professor Watts as occurring to the south of the Breidden Hills in a brook near Middletown Schoolhouse and the New Inn ; and Professor Lapworth points out that soft strata at this horizon are generally present throughout the Silurian districts of Shropshire and produce wide valleys between the Llandovery basement-beds and the Wenlock Shales.

The Woolhope Limestone is not present in Shropshire, and the Tarannon Shales pass up into the Wenlock Shales.

[1] *Quart. Journ. Geol. Soc.* xli (1885), 532.

[2] Ibid. x (1854), 62. See p. 70.

### Wenlock Series

The Wenlock Shales as developed near Wenlock and Coalbrookdale have been grouped by Mr. George Maw[1] as follows :—

4. Tickwood Beds, 300–500 ft.
3. Coalbrookdale Beds, 1100–1200 ft.
2. Buildwas Beds, 80–100 ft.
1. Basement Beds, 500–600 ft.

The whole of these beds are very uniform in character, and are grey shales and mudstones with nodules and bands of earthy limestone. Fossils are specially plentiful in divisions 2 and 4, and are generally small brachiopods (e.g., *Orthis biloba*), polyzoa, corals, and trilobites (e.g., *Encrinurus punctatus*, *Calymene Blumenbachi*, *Phacops caudatus*). Mr. Maw was particularly successful in obtaining great numbers of fossil specimens by washing away the shaly material and examining the residue.

The Buildwas Beds form a small cliff on the Severn opposite Buildwas Abbey, and yield numbers of small specimens of *Orthis* in an excellent state of preservation.

The upper beds of the Coalbrookdale subdivision are to be seen in the town, after which the beds are named.

The Tickwood Beds are exposed in a road-cutting near the railway-bridge between Tickwood and Farley Dingle ; also east of Benthall Edge, opposite Ironbridge, and in an adjacent cutting on the Severn Valley Railway. They may be seen also at Lincoln Hill. They yield abundant brachiopods. The highest beds are a cream-coloured soft unctuous clay which immediately underlies the Wenlock Limestone, and has given rise to landslips, notably one which occurred, about the end of the eighteenth century, near Marnwood, between Coalbrookdale and Buildwas. South-westward they extend along the base of Wenlock Edge, and have been eroded into long valleys such as that of Apedale.

The Wenlock Limestone is a grey rock abounding in corals, trilobites, and brachiopods ; it weathers to a brownish yellow colour, but when freshly broken is hard, of a blue colour, and more or less crystalline. It frequently assumes a concretionary form. It is made up largely of shells, polyzoa, crinoids, and masses of coral still in position of growth. Among the brachiopods may be mentioned *Atrypa reticularis*, *Meristella tumida*, *Orthis elegantula*, and *Strophomena rhomboidalis;* the corals include *Halysites catenularia*, *Heliolites*, *Favosites*, and *Omphyma turbinatum.*

In the Long Mountain[2] and its southerly continuation in Clun Forest no limestone on this horizon is known ; east of the Longmynd it sets-in in the neighbourhood of Craven Arms and thence extends north-eastward as the famous escarpment of Wenlock and Benthall Edge, running in a nearly straight line for over twenty miles till it passes under the Carboniferous rocks at Coalbrookdale. Numerous old quarries may be found along the escarpment, and from the spoil-heaps abundant fossils may be collected.

Above the Wenlock Limestone follows a mass some 900 ft. thick of grey shales, the lowest 100 ft. of which Mr. Maw would assign to the Wenlock

[1] *Geol. Mag.* 1881, p. 100.

[2] See also G. L. Elles, *Quart. Journ. Geol. Soc.* lvi (1900), 370.

Series. Under the name of Lower Ludlow Beds[1] they are generally grouped with the Ludlow Series, but they form a natural upward continuation of the Wenlock Shales, and accordingly Professor Lapworth would group them with the Wenlock Series. They consist of soft dark-grey sandy shales which tend to assume a spheroidal structure and contain calcareous concretions.

They form a band of soft measures between the outcrops of the Wenlock Limestone and the escarpment of the Aymestrey Limestone near Stokesay, and extend thence north-eastward towards Coalbrookdale, while in the opposite direction they trend to the west towards Leintwardine.

### Ludlow Series

The shales last described pass upward into thick earthy flagstones—the Leintwardine Flags—which have been quarried near Leintwardine. They contain large specimens of *Orthoceras*, with starfish, and crustacea of the genera *Pterygotus* and *Eurypterus*; but the most interesting fossils are the remains of fishes which are the earliest traces of vertebrates hitherto found in this country; they belong to *Scaphaspis ludensis*, and were discovered by J. E. Lee in shale below the Aymestrey Limestone at Church Hill Quarry near Leintwardine (in Herefordshire).

Above these flags comes a thin band of soapy soft clay locally called 'walker's earth,' which, like that beneath the Wenlock Limestone, is liable to give rise to landslips.

The Aymestrey Limestone, about 20 ft. thick, follows next; it occurs near Ludlow and enters the county north of Downton in the Teme Valley; it is traceable north-eastward by Stokesay and Dinchope, but north-west of Diddlebury it splits into two or three thin shelly bands, one or more of which can be followed past Munslow, Shipton, and Bourton; it becomes better developed again near Much Wenlock, but it disappears under the Carboniferous rocks at Benthall. It reappears in several small areas between Broseley and Bridgenorth. The rock is blue or grey in colour and of a concretionary character. It is rich in remains of corals, polyzoa, shells of *Pentamerus Knighti*, *Lingula Lewisi*, and *Rhynchonella Wilsoni*, and in the trilobite *Homalonotus*. The faulted inlier of Silurian rocks at Caynham Camp east of Ludlow contains a band of Aymestrey Limestone underlain by shales and overlain by Upper Ludlow Beds; a good section of these was recently opened in the pipe-trench of the Birmingham Waterworks.

The Upper Ludlow Beds[2] are soft sandy shales or mudstones, very slightly micaceous, and occasionally so calcareous as to form an impure limestone; in colour they are greenish or bluish-grey, but weather to a brown or yellow tint. Their summit is marked by a 'bone-bed'—the lower or Ludlow Bone-bed—a gingerbread-coloured layer, a few inches thick, made up of fragments of fishbones, scales, and spines. It was discovered at Ludford Lane, Ludlow, by the Rev. T. T. Lewis and Dr. Lloyd; it has been detected at Downton Castle and Norton, and also at Diddlebury; but from that point it has not been recognized towards the north-east till we reach Linley Brook, four miles north of Bridgenorth, where its occurrence

[1] See also E. M. R. Wood, *Quart. Journ. Geol. Soc.* lvi (1900), 415.
[2] See also G. L. Elles and I. L. Slater, ibid. lxii (1906), 195.

was detected and described by G. E. Roberts and J. Randall.[1] The fish whose remains occur most abundantly are *Auchenaspis*, *Cephalaspis*, *Plectrodus*, *Thelodus*, *Pteraspis*, and *Scaphaspis;* the crustacea include *Eurypterus* and *Pterygotus; Lingulae* also are present at Linley Brook.

A similar bone-bed has been found at the base of the Downton Sandstone outliers of Clun Forest by Mr. Garnett-Botfield.[2]

The Downton Sandstone follows the Ludlow Bone-bed; it consists of a considerable thickness of grey and yellow sandstone which has been extensively quarried near Downton Castle; it contains abundant specimens of the brachiopod *Lingula cornea*, with crustacean remains and land-plants, indicative of shallow-water conditions. At Linley Brook it is 8 ft. thick only. The small outlier of Old Red Sandstone shown on the map as crowning the Long Mountain at Forest of Hayes would appear to consist of Downton Sandstone rich in *Lingula cornea*,[3] and W. S. Symonds[4] records the occurrence there of *Pteraspis* and *Scaphaspis;* Downton Sandstone underlies the Old Red Sandstone outliers of Clun Forest.[5]

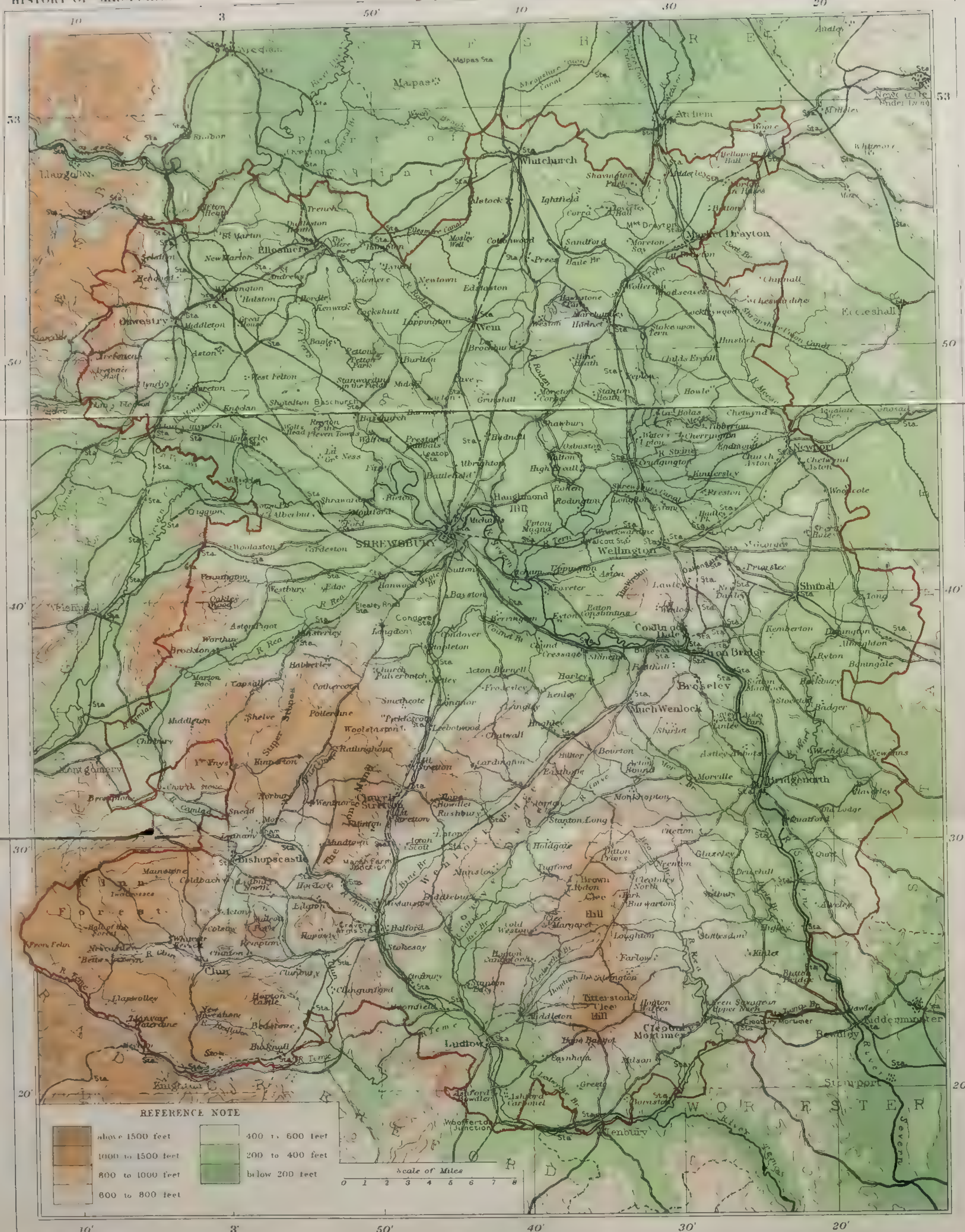
The Downton Sandstone is generally followed by a series of micaceous shales with sandstone-bands known as the Ledbury Shales, from their development in the Malvern district. They have yielded abundant remains of fish and crustacea. Mr. J. D. La Touche[6] records their presence in the lane leading from Onibury to Norton, also by the railway-bridge at Ludlow, and at the Tin Mills between Oakley Park and Downton Castle; and Symonds[7] speaks of them as yielding fish-remains in a railway-cutting north-east of Ludlow. At Linley Brook they yield *Lingulae*, plant-remains, and contain an upper bone-bed rich in fish-remains.

It has been already pointed out that the development of the Pentamerus, the Wenlock, and the Aymestrey Limestones is strictly local, and is chiefly confined to the east and south sides of the county; south-west and west the limestones are undeveloped, so that the whole of the Silurian rocks are represented by a great series of shales and mudstones, with few shells, but many graptolites. This is the case in Clun Forest, where the aggregate thickness is perhaps 7,000 ft., and in the Long Mountain also. The subdivisions thus become dependent on fossil evidence alone; and the graptolites have enabled Professors Lapworth and Watts[8] to divide the Silurian series of the Long Mountain as follows:—

4. Thin fissile shales with *Cardiola* (Upper Ludlow)
3. Hard thick flags with occasional shales; *Monograptus Leintwardinensis*, Hopk., *M. Salweyi*, Hopk., *M. Roemeri*, Barr. (Aymestrey)
2. Thin muddy shales with rare flaggy ribs; *M. colonus*, Barr., *M. Nilssoni*, Barr., *Cardiola interrupta*, Broderip (Lower Ludlow)
1. Mudstones, earthy in the lower part, more calcareous above; *Cyrtograptus Linnarssoni*, Lapw., *M. Flemingi*, Salt., *M. dubius*, Suess, *M. serra* (Wenlock Limestone and Shales)

[1] *Quart. Journ. Geol. Soc.* xix (1863), 229.
[2] Lapworth and Watts, *Proc. Geol. Assoc.* xiii (1894), 297. See p. 328.
[3] Ibid. 329.
[4] *Rec. of the Rocks*, 216.
[5] Lapworth and Watts, op. cit. 328.
[6] *A Handbook of the Geol. of Shrops.* (1884), 16.
[7] *Rec. of the Rocks*, 195.
[8] *Proc. Geol. Assoc.* xiii (1894), 297. See pp. 329–30.

# OROGRAPHICAL MAP.



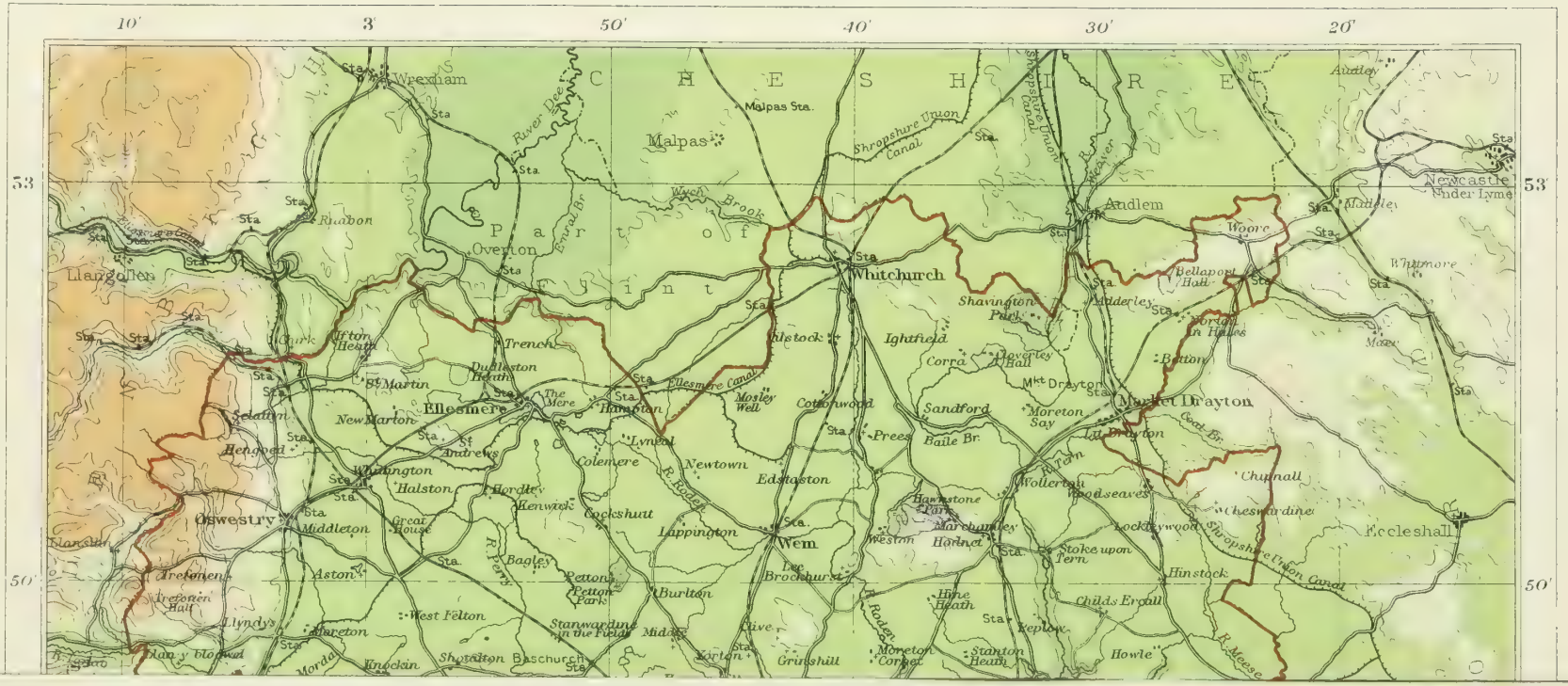

The Edinburgh Geographical Institute

J.G. Bartholomew

THE VICTORIA HISTORY OF THE COUNTIES OF ENGLAND

County Boundary shown thus

# OROGRAPHICAL MAP.




County Boundary shown thus ——

Mr. Garnett-Botfield has detected in the Ludlow beds north of Clun Forest a calcareous zone which appears to represent that of the Aymestrey Limestone.

The faulted strip of Silurian rocks west of Caradoc, mapped by the Geological Survey as Wenlock Shale with bands of limestone, is believed by Mr. E. S. Cobbold to contain all the Silurian stages from the Wenlock Limestone to the Upper Ludlow.

The Silurian inlier traversed by the Tenbury and Bewdley Railway at Neen Sollars, on the south-east border of the county, is partly faulted up through the Old Red Sandstone. All the members of the Ludlow Group are present. The Aymestrey Limestone has been quarried; fossils are abundant in the shales, and the limestone has yielded the usual trilobites and brachiopods. The characteristic *Lingula* of the Downton Sandstone and portions of a bone-bed are recorded by Symonds as observable in the railway section in 1865.

We have seen that upheaval and disturbances brought to a close the Ordovician period, and that the basement-beds and beach-deposits of the Silurian were laid down on the slightly upturned edges of the Ordovician rocks, and rest still more unconformably on all the pre-Ordovician formations. The Longmynd, the Wrekin, and Haughmond Hill appear to have stood up as an island in the Llandovery Sea, and were not submerged probably till Wenlock or Ludlow times. After the May Hill Sandstone period depression was resumed, leading to the deposition of fine muds and limestones when the water was sufficiently still and clear. The main land-tract at this time lay apparently to the north-west of Britain, for the limestones and coral-reefs are restricted to the south-eastern parts of our district, and as we travel in the opposite direction we find a complete absence of such deposits, while the mudstones are gradually replaced by shales, sandstones, and grits. The time of deepest depression was probably that of the Lower Ludlow, for after the Aymestrey Limestone was laid down the beds become more sandy, show gradually shallower conditions, and ultimately bring us through the passage-beds (Downton and Ledbury beds) to the lacustrine or estuarine deposits of the Old Red Sandstone.

## DEVONIAN

The gradual change of conditions which set in at the close of the Silurian period led to the deposition of a great thickness of red sandstones, shales, marls, and cornstones which constitute the Old Red Sandstone. By this time the greater part of Britain was probably a land-tract, and formed part of a continent which extended to the north and west. The sea in which the Silurian rocks were laid down had contracted at this epoch, and lay over what is now the southern part of Britain, and in it were laid down the marine Devonian rocks of Somerset, Devon, and Cornwall. From this sea a long gulf or estuary probably extended inland towards the north, and in this was deposited the Lower Old Red Sandstone of South Wales, Herefordshire, and Shropshire; while still farther north large inland lakes received the sediments which formed the Old Red Sandstone of Scotland.

The Geological Map of Shropshire shows the Old Red Sandstone as forming a large tract in the south-east of the county between the Silurian

region on the west and the Coal Measures on the east; a tract which is the northern extremity of a great outcrop extending southward through Herefordshire into South Wales. Farther west, the same red rocks occur as extensive outliers in Clun Forest and at Bucknell in the Teme valley. Finally, a small outlier represented as Old Red Sandstone is shown as capping the Long Mountain, but this would appear to consist in part, if not wholly, of Downton Sandstone.

In the south-eastern area we appear to have the usual sequence of Old Red Sandstone from the top of the Silurian to the base of the Carboniferous; the beds fall into two groups:—

*Upper Old Red Sandstone.*—Grey and red conglomerates and grits and yellow sandstones. *Pterichthys*, *Holoptychius*, *Conularia*

*Lower Old Red Sandstone.*—Red and yellow and green-mottled sandstones, flagstones, shales, marls, and cornstones. Fish and crustacea

The Lower Old Red Sandstone, sometimes known as the Red Marl and Cornstone Group, prevails in the south-eastern tract; the subdivision called Brownstones, a series of alternating red sandstones and marls, so well developed in the Beacons of Brecon and Carmarthen Fans in South Wales, does not appear to be represented. The Upper Old Red Sandstone is represented by red conglomerates and yellow sandstones, and is to be found beneath the Carboniferous Limestone of the Titterstone Clee Hill.

The Cornstone Group consists of red marl and shale, often streaked and spotted with pale blue and green colours, and frequently very micaceous; among these marls and shales are occasional thin bands of pale or dull-red fissile sandstone and yellow flaggy sandstone. The cornstones, which occur at intervals throughout the series, and usually give rise to escarpments, are beds of impure concretionary limestone of inorganic origin, and may take the form of lenticular bands of compact rock, or more frequently perhaps assume a conglomeratic form, the rock being made of slightly-rolled calcareous concretions set in a red or green marly paste, and among the pellets are often found fragments of the bones and hard parts of fish and crustacea. These cornstone bands are seldom more than a few yards thick, but many are shown on the Geological Survey maps; and one which makes a considerable show on the surface west of Stoke St. Milborough is represented as Coal Measures on the map accompanying this article. Near the Brown Clee Hill one of the cornstones appears to have been extensively quarried and burnt for lime at Abdon Lime Works, about half a mile south-east of Abdon, and again at Ditton Lime Works, a mile south-west of Ditton Priors. A lower band has been worked at a lime-kiln one mile west of Long Stanton, and there were lime works also in the uppermost cornstone band south-east of Clee Burf.

The fossils of the Cornstone Group are chiefly the remains of crustacea, such as *Pterygotus* and *Stylonurus;* and of fishes, such as *Pteraspis*, *Scaphaspis* (now known to be the ventral shield of *Pteraspis*), *Cephalaspis*, &c. Symonds[1] records that at Whitbatch, about three miles north-east of Ludlow, in flagstone quarries in some of the lowest beds of the Old Red series, Dr. Lloyd discovered remains of the ganoid fish *Scaphaspis Lloydi;* and from the same

[1] *Rec. of the Rocks*, 218.

quarries have been obtained nearly perfect specimens of *Cephalaspis Lyelli* These beds are overlain by thin cornstones containing scales of *Pteraspis*. Farther north, at the Devil's Mouth at Hayton, ventral and dorsal shields of *Pteraspis* occur in abundance; and at Hopton Gate, *Zenaspis Salweyi* was found by Mr. Harley.

Prestwich[1] describes the Old Red Sandstone to the south-east of Much Wenlock as consisting of very dark red clay alternating with micaceous sandstones and marls, and in red sandstones at Wenlock Walton he found *Lingula cornea*.

At a quarry at Bouldon the cornstone and sandstone beds have yielded the usual fish and crustacean remains, together with tracks of the latter, which have been described and figured by Geo. E. Roberts.[2]

Symonds states that the upper beds of the Cornstone Group have been quarried above Bitterley Court, and at Abdon and Ditton below the Brown Clee Hill, but no fossils appear to have been met with.

Recently some good sections of the Old Red Sandstone between Ludlow and the Titterstone Clee Hill, and again eastward to the Wyre Forest Coalfield, have been opened up during the construction of the aqueduct of the Birmingham Corporation Waterworks (Elan Supply). From these sections it appears that the Cornstone Group occupies the surface from Ludlow eastward as far as the Studley Tunnel north of Hope Baggot (with the exception of the Silurian inlier of Caynham Camp), and again eastward from the tunnel through Earl's Ditton, Hollywaste, Neen Savage, and so on to the Coal Measures at Malpas's Wood. But in the tunnel itself, which is cut through the southern promontory of the Titterstone Clee Hill, pebbly light-red coarse sandstone was struck at about 1,400 ft. from the western mouth, and it is probable that this rock belongs to the lower part of the Upper Old Red Sandstone[3] exposed in various sections hard by.

The outliers of Old Red Sandstone of Clun Forest show that the rocks formerly extended much farther to the west; the beds belong to the Cornstone Group; from the Geological Survey maps it appears that the rocks which occur north of Bettws-y-Crwyn consist of grey sandstone and red marl, the former having been to some extent quarried; a little west of the same place pale sandstone has been wrought at Crossway quarries, while thick beds of green marl with *Lingulae* are stated to occur to the north of Bicton and Keysett. It is probable that some of the Downton Sandstone and Ledbury Shales have been included within these Old Red Sandstone areas. The Silurian passage-beds which Symonds records as occurring near Felindre are overlain above Newcastle and near Bettws by Lower Old Red Sandstone and marl, with remains of the characteristic fishes.

The Upper Old Red Sandstone may possibly be present at the south end of the Titterstone Clee Hill; it has long been known at Farlow, farther to the north-east, where it consists of a series of yellow sands, sandstones, and conglomerates, which pass upward into the Carboniferous Limestone Series. The stone with which the church was rebuilt about 1862 was obtained at Farlow quarry; it is described by Morris and Roberts[4] as a fine-

[1] *Trans. Geol. Soc.* (Ser. 2), v, 412. See p. 424
[2] *Quart. Journ. Geol. Soc.* xix (1863), 233.
[3] T. C. Cantrill in 'Summary of Progress' for 1901, *Mem. Geol. Surv.* 62.
[4] *Quart. Journ. Geol. Soc.* xviii (1862), 94.

grained, pale-yellow sandstone with occasional quartz-pebbles. These beds have yielded remains of several species of *Pterichthys*, scales of *Holoptychius*, and fragments of the pteropod *Conularia*. The *Pterichthys macrocephalus*, found by Mr. T. Baxter, resembles a species found in the Dura Den beds of the Scottish Upper Old Red Sandstone.[1]

The slow and regular subsidence which led to the accumulation of the great succession of marls of the Lower Old Red Sandstone, in what may have been a gulf or estuary opening into the Devonian sea, subsequently appears to have given place to a shallowing which led to the deposition of the coarse sandstones and conglomerates of the Upper Old Red Sandstone. After or even during their deposition, however, the sea gained access to the region, and unequivocal marine organisms again invaded the region at the beginning of the Carboniferous period. Probably a general subsidence of the whole region brought this about, so that the districts of the Titterstone Clee Hill and Coalbrookdale, where we find attenuated representatives of the Carboniferous Limestone, were certainly submerged beneath the sea. But, on the contrary, much of the Lower Old Red Sandstone must have been undergoing elevation into a land-area which was not submerged till late Coal Measure time, for generally the Upper Coal Measures of Shropshire repose directly on older rocks—Archaean to Lower Old Red Sandstone—without the intervention of the Carboniferous Limestone and Millstone Grit.

## CARBONIFEROUS

The submergence which ushered in the Carboniferous period appears to have been slow and widespread though intermittent; by it successively higher portions of the pre-existing land were lowered beneath the waters of the sea. There is good evidence that during the deposition of the Carboniferous Limestone much of South Shropshire remained above water as part of an extensive island of Old Red Sandstone and older rocks, which stretched eastward from the east coast of Ireland through Central Wales, South Shropshire, Staffordshire, and Warwickshire. To its north and east lay the Carboniferous sea, in which were laid down the coral-reefs and banks of shelly detritus which constitute the limestone at Oswestry, at Lilleshall, and on the western border of the Coalbrookdale coalfield; while that on the Titterstone Clee Hill was laid down presumably in an indentation of the coast of this island.

The Carboniferous rocks fall into three divisions—the Carboniferous Limestone, the Millstone Grit, and the Coal Measures. The full succession is found only in those districts which were sunk below the sea-waters at the close of the Old Red Sandstone period, as in the case of the Denbighshire coalfield, which stretches south of the River Ceiriog into Shropshire at Oswestry. Farther south, where the Carboniferous rocks emerge from the alluvium and Trias at Alberbury, at the western end of the Shrewsbury coalfield, the Upper Coal Measures rest directly on the Ordovician and Silurian rocks, showing that here submergence did not take place till late Coal Measure times. The same is the case in the Leebotwood coalfield and

[1] Egerton, *Quart. Journ. Geol. Soc.* xviii (1862), 103.

its outlier at Eyton. At Lilleshall, at the northern extremity of the Coalbrookdale coalfield, the Limestone and Millstone Grit reappear, and presumably underlie the Coal Measures nearly as far as Coalbrookdale, but land lay evidently close to the south-west, for the Limestone disappears again at Barrow, and is soon followed by the Millstone Grit. Thence southward the Coal Measures of the Coalbrookdale coalfield and its continuation, the Wyre Forest coalfield, rest directly on the Old Red Sandstone. At the Titterstone Clee Hill, however, the Limestone and Millstone Grit come in again, and appear to have been laid down in an inlet or channel which ran inland either southward from the northern shore of the old island, or northward from its southern shore. In the same line we find a thin representative of the Grit emerging from beneath the Coal Measures south-east of Stottesdon.

### Carboniferous Limestone

The Lower Carboniferous rocks of Oswestry were described in 1829 by the Rev. J. Yates,[1] and have more recently received attention from George H. Morton[2] of Liverpool and Dr. Wheelton Hind and J. T. Stobbs.[3]

The Limestone enters Shropshire at the River Ceiriog, where it forms an escarpment overlooking the Silurian rocks on the west. Hereabouts the rock belongs to the Upper Grey Limestone or highest of the four subdivisions into which it has been divided by Mr. Morton at Llangollen, and is about 137 ft. thick. At Bron-y-garth Quarry it consists of a series of alternating beds of grey and black limestone and shale, rich in specimens of *Productus giganteus*, *Lithostrotion Portlocki*, and *Syringopora geniculata*. The succeeding Cefn-y-fedw Sandstone, a series of sandstones with shales and limestones, represents the highest beds of the Carboniferous Limestone.[4]

At Craignant, a mile north-west of Selattyn, a similar section is presented, though the Limestone is apparently reduced to about 87 ft., and land probably lay not far away on the west; the Limestone appears to increase again still farther south, at Llawnt, west of Oswestry, to 108 ft. A good view of the limestone escarpment is obtained from the road from Llawnt to Llansilin.

West of Trefonen the beds assume a reddish tinge towards their base, and become sandy, and at Craig Sychtyn a lower division—the Upper White Limestone of the Llangollen district—reappears and thickens and persists south-eastward, indicating that here the water was deep enough to accommodate some thickness of calcareous deposits before the formation of the Upper Grey Limestone. Quarries in the latter may be seen at Treflach Wood and Dolgoch near Llynclys station. The Upper White Limestone is characterized by a light grey or cream colour and by the red and purple tint of its intercalated shales; this subdivision is quarried at Moelydd and on the north side of Nant Mawr, a mile south of Trefonen Hall, and at Porth-y-waen, a mile west of Llynclys station; it is specially well exhibited in the quarried scarp on the south-east side of Llanymynech Hill, where some of the beds are oolitic. Here a third or still lower subdivision, the Lower White

[1] *Trans. Geol. Soc.* (Ser. 2), ii, 237.
[2] *Proc. Liverpool Geol. Soc.* iii, 152, 299, 371.
[3] Hind and Stobbs, *Geol. Mag.* 1906, p. 385.
[4] Hind and Stobbs, loc. cit.

Limestone of Llangollen, is represented by white limestone with bands of shale, frequently red, and containing rounded fragments of the Silurian rocks. The total thickness of the Carboniferous Limestone at Llanymynech Hill is 450 ft. Here and at Crickheath Hill the Limestone is traversed by numerous metalliferous lodes, chiefly copper and lead, some of which appear to have been worked by the Romans.[1]

The Cefn-y-fedw Sandstone of the Oswestry district has been described in detail by D. C. Davies and George H. Morton. It possesses special interest in that it was till recently believed to represent the Millstone Grit of other districts.[2]

In the Llangollen district the Upper Grey Limestone passes up into sandy limestone and this is followed by a series some 700 ft. thick of yellow and grey conglomerates, sandstones, and shales, with occasional bands of limestone; in most of these beds occur numerous fossils of the ordinary Carboniferous Limestone types. The series is well developed on Cefn-y-fedw, north of Llangollen, and hence derives its name of Cefn-y-fedw Sandstone; the upper part was thought to represent the Millstone Grit of Derbyshire, &c., and the lower part to be the equivalent of the so-called Yoredale rocks of Yorkshire.[3]

The lower sandstones have been quarried for building materials as at Bron-y-garth, in the Ceiriog Valley, and the same beds form the bold eminence of Selattyn Hill. Farther south, sections may be seen about Oswestry race-course and on the rocky ridge of Craig Forda, crowned by the famous Offa's Dyke. At Cwm Sych, chert-beds are exposed some 200 ft. above the base. Fossils, chiefly of the genera *Productus*, *Rhynchonella*, and *Spirifer*, may be obtained from the sections about Cyrn-y-bwch. According to Dr. Hind and Mr. Stobbs some beds at Sweeney Mountain and Oswestry race-course may be referable to the Millstone Grit.

In the south part of the district the lowest beds of the series become soft and red-coloured; they have been well exposed east of the limestone quarries at Treflach Wood, and Messrs. D. C. Davies[4] and G. H. Morton[5] have described a good section of about 500 ft. of the series as exposed in an old tram-line near Treflach Hall. The beds have yielded numerous examples of the usual shells and corals and also the trilobite *Phillipsia*, the cephalopod *Orthoceras*, together with plant-remains such as *Calamites* and *Sigillaria*.

The Limestone next appears faulted against the eastern side of the Uriconian rocks at Lilleshall, north-east of Wellington. Murchison[6] in 1839 speaks of it as having been formerly got by openworks at the outcrop, but in his day it was being got by shafts some distance to the east, the pits near Aston being 120 yds. deep. At the old openworks the beds consist of some 100 ft. or more of alternating sandy limestones, yellow, red, and black shales, impure dark-red and green concretionary limestones containing specimens of *Productus* and large bunches of corals in position of growth, and pinkish-red sandstones with quartz-pebbles. The beds were evidently laid down at no great distance from a land-tract.

[1] Morton, *Proc. Liverpool Geol. Soc.* iii (1879), 412-15.
[2] W. Prosser, *Geol. Mag.* 1865, p. 107.
[3] A. H. Green, *Geol. Mag.* 1867, p. 11.
[4] D. C. Davies, *Geol. Mag.* 1870, pp. 68, 122.
[5] G. H. Morton, *Proc. Liverpool Geol. Soc.* iii (1879), 382.
[6] *Silurian System*, 107.

From Lilleshall south-westward to Wellington the Coal Measures are faulted against the Trias, but the Limestone reappears east of the Wrekin and extends from Steeraway southward to Little Wenlock ; it is bounded on the west by a sill of intrusive basalt. Some coarse yellow grits which have been quarried at the southern end of the Limestone outcrop appear to be the lowest beds of the series, but possibly represent the yellow sandstones (Upper Old Red Sandstone) of Farlow ; they are followed in ascending order by light-grey shale containing limestone nodules and exposed at the Hatch.[1] Then follows the Limestone, which has been extensively quarried at Steeraway and the Hatch ; it consists of an aggregate thickness of 33 ft. of good limestone in a thickness of about 100 ft. of impure limestone and shale. The rock is dark grey in colour and rich in species of *Productus*, notably *P. hemisphaericus*, but is made up chiefly of corals, including *Lithostrotion* and *Syringopora*. The limestone appears to pass up into about an equal thickness of sandstone and carbonaceous shale at Oldfield Quarry near Little Wenlock.[2] Murchison records that the limestone was formerly got by pits at Lawley, some distance east of the outcrop.

Around the southern promontory of Titterstone Clee Hill and again at Farlow and Oreton at the north-eastern extremity, the Limestone may be seen in numerous old quarries. Murchison[3] has given a detailed account of the limestone series of this district ; from his observations it appears that at the eastern end of its outcrop round Knowl Hill the workable limestone is some 15 or 18 yds. thick, and is nearly vertical. It has been extensively worked at Navers. The Limestone Series which appears where best developed to be about 200 ft. thick, includes at its base some 60 ft. of shale containing bands of impure limestone. Some of the rock is notably oolitic ; other bands are shelly and crinoidal. The usual marine fossils are present, and include forms of *Productus*, spiriferids, and crinoids ; while at Gorstley Rough has been found a fin-spine, *Ctenacanthus tenuistriatus*. West of Bennett's End the Limestone is said to thin away, and the Millstone Grit to rest directly on the Old Red Sandstone. Dr. Ricketts observes that the limestone here differs from that to the north (Coalbrookdale, &c.) in being markedly oolitic especially in a quarry north-east of Knowl ; at the same time the shells are in a comminuted condition. These peculiarities suggest the near-shore origin of the rock, and perhaps point to a former connexion with the Limestone of Dean Forest and South Wales rather than with that of Coalbrookdale.

According to Messrs. Morris and Roberts[4] the limestone at the northern side of the Titterstone Clee thins and deteriorates in purity both eastward and westward of Oreton. Murchison gives the total thickness of the workable limestone here as 40 or 50 ft. and remarks that the Oreton quarries have yielded grey oolite known as Clee Hill Marble which has been used in the mansions of Oakley Park, Downton Hall, and Hopton House. The Limestone Series consists of bands of grey crinoidal and shelly limestone alternating with soft sandstones and clays. The Farlow quarries have yielded a number of fish-remains such as palatal teeth and spines of fishes allied to

[1] Eyton, *Notes on the Geology of North Shropshire*, 27 et seq. 1869.
[2] Ricketts, *Proc. Liverpool Geol. Soc.* iii (1876), 100.
[3] *Silurian System*, 118–21.
[4] *Quart. Journ. Geol. Soc.* xviii (1862), 94.

sharks, and shells, chiefly spiriferids and rhynchonellids, and good collections were made by Mr. Weaver Jones of Cleobury Mortimer and Mr. E. Baugh of Bewdley.

A small stream sinks into the Limestone in a hollow called The Foxholes at the western end of the outcrop and flowing under one of the Oreton quarries re-appears at a distance of a mile and falls into the Rea Brook.[1]

### Millstone Grit

The marine deposits of the Carboniferous Limestone are succeeded by beds of conglomerate, grit, sandstone, and shale, which constitute the Millstone Grit. These indicate a change of conditions; the Limestone sea, which was probably from the first more or less land-locked, became separated from the main ocean and converted into an estuary or large inland lake into which rivers poured gravel and sand and drifted remains of land-plants; and occasionally the ocean waters invaded the area and left as witnesses some thin and scattered bands of limestone or shale containing marine organisms. All these deposits constitute the Millstone Grit Series; and as the estuary or lagoons became gradually silted up and converted into swamps and deltas, land-plants established themselves on the surface of the mud-flats and gave rise to thick beds of vegetable matter—now coal. By prolonged subsidence a great thickness of alternating beds of sand, mud, and vegetable matter was accumulated, the whole now forming the Coal Measures.

Till lately the Millstone Grit of the Oswestry district was supposed to be represented by the Cefn-y-fedw Sandstone; but recent work[2] has shown that the latter is a sandy facies of the upper part of the Carboniferous Limestone, while the Millstone Grit (the Gwespyr Sandstone of the region farther north) is doubtfully present at Oswestry race-course and Sweeney Mountain.

The Millstone Grit of Lilleshall may be perhaps represented by certain white and red carbonaceous sandstones with plant-remains, alluded to by Murchison as overlying the limestone there. It reappears east of the Wrekin, where it is referred to by Miss Eyton as consisting of a few thin bands of coarse sandstone alternating with limestone; and Dr. Ricketts remarks that at Steeraway the beds are 80 ft. thick and that the basement beds are quartz-conglomerates. It is overlapped by the Coal Measures south of Broseley and does not reappear for some miles farther south. Some yellow sandstone with quartz pebbles crops out from beneath the Coal Measures at Baginswood a mile south-east of Stottesdon on the western border of the Wyre Forest coalfield and may possibly represent the Grit.

At the Brown Clee Hill there appears to be some thickness of hard white siliceous sandstone between the lowest coal-seam and the Old Red Sandstone which may possibly represent the Millstone Grit.[3] It crops out on the north-east side of the Titterstone Clee Hill, at Clee Hill Common and Farlow Inclosure, and also farther south at Knowl. It consists of pebbly quartzose conglomerate and thick-bedded hard white and coarse yellowish sandstone. It is several hundred feet thick south of Cornbrook, but is reduced to 48 ft. west of Bennett's End. It contains remains of plants.

[1] Morris and Roberts, op. cit. 96.
[2] Hind and Stobbs, *Geol. Mag.* 1906, p. 385.
[3] R. Wright, *Trans. Geol. Soc.* (Ser. 2), v, 125.

## Coal Measures

The Coal Measures of Shropshire form a broken belt extending across the county from north-west to south-east, and constitute a series of more or less isolated coalfields. We will consider these in order, beginning with that of Denbighshire.

*Denbighshire Coalfield.*—The southern end of this coalfield extends into Shropshire. Murchison[1] observes that the productive area lies near Oswestry; and that there are only two seams worth working, the upper, 4 ft. thick, being fairly good in quality; the lower, 6 ft. thick, being of little value. There were two deep shafts at Dryll, a mile south of Oswestry, through 118 yards of red beds, then 64 yards of the usual grey sandstones and shales with several ironstone and coal seams, two of which, respectively 3 ft. 4 in. and 3 ft., were worked.

The Upper Coal Measures of the district between Ruabon and Oswestry have been described by D. C. Davies.[2] They have recently received attention from Mr. W. Gibson,[3] who has shown that they fall into the four well-marked subdivisions previously established by him in North Staffordshire. The beds contain a few workable coals and a well-marked band of sandstone, the Coedyrallt Rock.

*Shrewsbury Coalfield.*—The Coal Measures of this tract[4] appear to belong exclusively to the upper parts of the series; they extend from near Alberbury on the west to Uffington east of Shrewsbury, resting unconformably on various pre-Carboniferous rocks and overlain by the so-called Salopian Permian beds. Coal has been worked along the southern borders of the coalfield from one end nearly to the other; there are three seams, known as the Half Yard, the Yard, and the Two-foot; the first two are poor and pyritous; the third is of better quality. The thickness of measures between the highest and lowest of the three seams is about 150 ft. at Pontesbury, but elsewhere varies. Between Pontesbury and Westbury the three seams are found, but west of the latter one of them thins out.

A remarkable feature of this coalfield is the band of *Spirorbis*-limestone discovered by Murchison in 1832. It varies from 3 ft. to 8 ft. in thickness and is associated with the coals. The following pit-section of the measures at Pontesford shows their relative positions:—

| | Ft. | In. |
|---|---|---|
| Half-yard Coal | 1 | 6 |
| Shale and Sandstone | 57 | 0 |
| Limestone, in two beds | 7 | 0 |
| Shale and Sandstone | 42 | 0 |
| Yard Coal | 3 | 0 |
| Shale and Sandstone | 54 | 0 |
| Thin Coal (best quality) | 1 | 4 |

The upper bed of limestone is compact, cream-coloured, and has a splintery conchoidal fracture; the lower is cellular. The rock contains a

[1] *Silurian System*, 141.
[2] *Proc. Geol. Assoc.* iii (1873), 138; *Quart. Journ. Geol. Soc.* xxxiii (1877), 10.
[3] *Quart. Journ. Geol. Soc.* lvii (1901), 251.
[4] See Murchison, *Silurian System*, 79.

small coiled annelid, *Spirorbis pusillus*, also *Cyclas* and the entomostracan *Cypris*, as well as fish-remains.

*Leebotwood Coalfield.*—The Coal Measures of this tract closely resemble those of the Shrewsbury district; coal was raised by shafts at about a mile north of the village, and the *Spirorbis*-limestone associated with the coals was extensively burnt for lime; it was about 6 ft. thick and lies at about 20 yards below the surface. A pyritous coal, 3 ft. thick, lies 11 yards below the limestone, and 6 yards still lower is a coal of better quality a foot thick. Plant-remains, chiefly ferns, abound in the shale roof of the coal; *Spirorbis* and fish-remains have been found in the limestone. Coal has been worked also towards Pitchford, where the basement-beds of the Coal Measures consist of a breccia derived from the underlying Longmyndian rocks; this breccia was found to be so rich in bitumen that it was once quarried and distilled at Shrewsbury and the distillate sold for medicinal uses. The name of the village refers to a well on which an accumulation of this bitumen formerly appeared.[1] Coal has been worked in the small outlier at Eyton, west of Eaton Constantine; two seams were found, but no *Spirorbis*-limestone.

*Coalbrookdale Coalfield.*—This mineral tract, our knowledge of which is due chiefly to the classic memoir by Prestwich[2] published in 1837, presents us with a more complete series of the measures than is the case with any other of the Shropshire coalfields. Not only do the comparatively barren newer measures of the Shrewsbury and Leebotwood districts occur in this area, but beneath them we find a great development of older beds containing numerous seams of coal and ironstone of excellent quality.

The River Severn crosses the district obliquely and, after passing through a gorge in the Wenlock Limestone between Benthall Edge and Lincoln Hill, enters the Coal Measures at Ironbridge and does not leave them till it reaches Apley Park; and the sides of the valley exhibit numerous sections of the strata. The lowest beds crop out at Steeraway, the Hatch, and the Dunge near Broseley, but the higher beds are exposed more rarely. The former consist of dark grey shales and lighter-coloured sandstones; the upper and less productive parts of the series consist of marls, shales, and thick-bedded sandstones, light-grey, yellow, or red in colour. The total thickness was estimated by Prestwich at about 1,000 ft.

The lower sandstones have been quarried for building-stone, and some beds above the Little Flint Coal were found specially suitable for the construction of furnace hearths. Some of the fireclays rival those of Stourbridge. The average thickness of the coal-seams is about 3 ft.; the number varies from 7 to 22; and the whole thickness of coal from 16 ft. at Amies in the south to 55 ft. at Donnington in the north. The Clod Coal is stated to be the best seam in the district. The ironstone occurs as flattish nodules of argillaceous carbonate, and has been largely smelted. Petroleum occurs in some of the measures: a tar-spring at Coalport once yielded nearly 1,000 gallons a week. The 'burning well' at Broseley, which ceased to burn in 1755, owed its peculiarity probably to the evolution of carburetted hydrogen.

[1] See Murchison, *Silurian System*, 94.
[2] *Trans. Geol. Soc.* (Ser. 2), v, 413.

The following section taken from Prestwich's paper shows the coal-seams proved at Hill's Lane pits, Madeley :—

| | Ft. | In. |
|---|---|---|
| Viger | 1 | 8 |
| Two-foot | 1 | 8 |
| Little Ganey | – | 7 |
| Lower Ganey | 1 | 6 |
| Best | 2 | 5 |
| Randle | 2 | 8 |
| Clod | 1 | 4 |
| Little Flint | 2 | 10 |
| Crawstone | 1 | 0 |
| Lancashire Ladies | – | 9 |

Much, however, of the coal in the western and shallower parts of the district has long been worked out ; future supplies depend on deep sinkings on the eastern side through the overlying ' Permian ' rocks.

The newer barren measures contain a few thin pyritous coals, and a band of *Spirorbis*-limestone 1 yd. or 2 yd. thick, first noticed by Murchison ; it crops out at Tasley near Bridgenorth, and has been burnt for agricultural lime and appears to be adapted for hydraulic cement.

The relationship of the newer unproductive measures to the older productive group is one of considerable unconformity, and the plane of separation between the two is known as the Symon Fault. It was found by Marcus Scott[1] that a bed of red and yellow mottled clay locally known as calaminker, which lies at the base of the newer measures, when followed from pit to pit from north-west to south-east gradually descends in the measures and successively cuts off the coal-seams, the upper being the first to disappear. This result is due to a certain amount of local upheaval and erosion of the older measures prior to the deposition of the newer, and Mr. Randall,[2] Mr. Daniel Jones,[3] and more recently Mr. W. J. Clarke,[4] have extended Scott's conclusions to other parts of the district.

The organic remains of the Coal Measures of this district include the usual plants, allied to the tree-ferns, horse-tails, and club-mosses ; and brackish-water mollusca, as well as a crustacean (*Prestwichia*) allied to the modern *Limulus* or king-crab.

*Wyre Forest Coalfield.*—This may be regarded as a southerly extension of the coalfield last described, and contains two sets of measures—an older or productive series and a newer or comparatively barren series. The former beds contain some thick and valuable seams of coal and ironstone which crop out on the west at Harcott near Kinlet ; the coals have been for some years worked at Highley (=Higley) and have recently been proved in pits farther south. The newer measures contain several thin seams of pyritous coal, and a band of *Spirorbis*-limestone which was apparently first noticed by Geo. E. Roberts ; its association with the higher measures was observed by Binney of Manchester, and it was subsequently traced over a large part of the coalfield by Mr. Daniel Jones. It no doubt represents the same band previously detected by Murchison in the Shrewsbury and Coalbrookdale coalfields, and occupies much the same position with regard to the pyritous coals.

[1] *Quart. Journ. Geol. Soc.* xvii (1861), 457.
[2] Letters in *The Mining Journal*, 1869.
[3] *Geol. Mag.* 1871, p. 200; ibid. 363.
[4] *Quart. Journ. Geol. Soc.* vii (1901), 86.

Southward towards the Dowles Valley the workable coals of Harcott and Highley appear to thin out,[1] and Mr. Daniel Jones[2] has brought forward evidence to show that the phenomena of the Symon Fault of Coalbrookdale extend southward into this coalfield.

*Clee Hill Coalfields.*—These interesting relics of a former westerly extension of the Coalbrookdale and Wyre Forest Coal Measures occupy a lofty position in the south-east part of the county, surrounded by Old Red Sandstone. The Brown Clee Hill consists of two small outliers, Abdon Burf on the north (1,806 ft. above sea-level) and Clee Burf on the south. The Coal Measures form shallow basins ; according to Murchison[3] there are three coal seams : the upper 2 ft. thick, the middle or Batty Seam 3 ft., the third or Single Coal 2 ft. 6 in. The first two are inferior and pyritous, and are separated by 9 ft. of clod and shale ; the Single Coal is the best in quality and is 12 ft. below the Batty Seam. Ironstone nodules occur in the lower beds. The coals were worked by pits varying from 15 yds. to 80 yds. in depth, and it is probable that little remains to be got. The ironstone seems to have been formerly smelted at Bouldon, where there are—or were in 1833—large quantities of cinders.[4]

The Titterstone Clee Hill measures are of greater economic importance; in the Cornbrook and Knowbury districts there are four principal seams : the Great Coal, 6 ft. thick ; the Three-quarter Coal, 2 ft. 9 in. ; the Smith Coal, 4 ft. 6 in. ; and the Four-foot Coal, 4 ft. thick ; and associated with the coals there are valuable bands of ironstone which was formerly smelted on the spot.

The Coal Measures of the Clee Hills appear to belong exclusively to the older or productive beds of Coalbrookdale and Wyre Forest, according to Mr. Daniel Jones.

### Igneous Rocks of the Shropshire Coalfields

At some time subsequent to the deposition of the Coal Measures, sheets of basalt were intruded into the beds and there solidified.[5] In Coalbrookdale one of these sheets underlies the Carboniferous Limestone, and a little farther east appears in contact with the Millstone Grit. At Kinlet in the Wyre Forest a similar rock has been intruded into the productive Coal Measures, as is also the case at the Brown Clee Hill, and at the Titterstone Hill. The Clee Burf basalt appears to be a thin sheet, and has been sunk through in the coal-pits ; that at Abdon Burf was thought by Murchison to occupy a funnel or pipe. On the Titterstone Hill the rock is well-exposed at the Giant's Chair on the west of the Ancient Encampment, and stands out in rude irregular prisms 4 ft. or 5 ft. in diameter, and 10 ft. to 15 ft. high. It has been proved to be at least 64 yds. thick in some of the coal-pits, and appears to have risen up in molten form by a fissure—apparently a fault—running under the Cornbrook tract ; on approaching the fissure the coal-seams were found to be charred to soot.

[1] T. C. Cantrill, 'Geology of the Wyre Forest Coalfield,' 1895 ; also *Colliery Guardian*, lxxi (1896), 351.
[2] *Trans. Fed. Inst. Min. Eng.* vii (1894), 287, 577 ; also viii (1895), 356.
[3] *Silurian System*, 122.
[4] R. Wright, *Trans. Geol. Soc.* (Ser. 2), v, 125.
[5] Allport, *Quart. Journ. Geol. Soc.* xxx (1874), 529.

## 'Permian'

Conformably overlying the upper unproductive Coal Measures of the Shropshire coalfields is a series of red sandstones and marls, with occasional conglomeratic cornstones and bands of calcareous conglomerate and trappoid breccia. These rocks are shown on the accompanying geological map as Permian. They are most fully developed in the south-eastern corner of the county, in the district lying between the Severn and the village of Enville, and hence have long been known as the Lower Permian rocks of Salopian type, to distinguish them from rocks of different character but supposed similar age to be found in Lancashire.

The succession in the Wyre Forest or Enville district was worked out in some detail by Ramsay[1] and Dr. Hull;[2] in 1895 I found that the Lower subdivision contains one or more bands of *Spirorbis*-limestone and thin coal-seams,[3] and the Middle and Upper subdivisions have more recently been studied by Mr. W. W. King.[4] The following table shows the sequence in descending order :—

| | | |
|---|---|---|
| Salopian Lower Permian | Upper, 170 ft. to 350 ft. | Marl with breccia-bands. |
| | | Trappoid breccia and breccia-sandstone. |
| | Middle, 200 ft. to 330 ft. | Marls. |
| | | Calcareous conglomerate and sandstone. |
| | | Sandstones and marls. |
| | | Calcareous conglomerate and sandstone. |
| | | Sandstones and marls. |
| | | Calcareous sandstone and cornstone. |
| | Lower, 850 ft. | Red sandstones and marls, with cornstones, and one or more bands of *Spirorbis*-limestone and thin coals. |

The rocks forming the Lower subdivision are well displayed in the Severn Valley near Upper Arley, Alveley, Highley (Higley), and Chelmarsh. Some of the sandstones are largely quarried for grindstones and have yielded some badly-preserved plant remains; occasionally the cornstones, which are conglomeratic and resemble those already alluded to (p. 24) as present in the Lower Old Red Sandstone, have been burnt for lime. The most interesting bed, however, is a thin band of dark-blue bituminous limestone characterized by an abundance of the small coiled annelid *Spirorbis pusillus*, such as we have seen occurs in the higher Coal Measures elsewhere. This limestone I traced from Shatterford to Chelmarsh; it lies some 200 ft. or 300 ft. above the base of the subdivision. As it is probably never more than a yard in thickness, and is generally associated with soft marls, it is seldom to be seen in situ, but blocks of it are abundant in many of the streams flowing down the eastern side of the Severn Valley, and in 1895 it was to be seen cropping out at the top of the cutting on the Severn Valley Railway at Stanley near Highley. A thin coal-seam, probably not above 6 in. thick, crops out a little below the limestone in Little London Brook south of Alveley.

[1] *Quart. Journ. Geol. Soc.* xi (1855), 185.
[2] 'Triassic and Permian Rocks of the Midland Counties of England,' *Mem. Geol. Surv.* 1869, chap. 2.
[3] *Quart. Journ. Geol. Soc.* li (1895), 528; *Coll. Guard.* 73 (1897), 581.
[4] *Quart. Journ. Geol. Soc.* lv (1899), 97.

These red rocks I suggested in 1895 would be more fittingly grouped with the Coal Measures, as has since been done in the case of the same rocks (Keele Beds) in North Staffordshire by the Geological Survey.[1]

The Middle subdivision overlies the rocks just described, and the intercalated conglomerates form some picturesque escarpments extending from Romsley to Coton Hall, and again from Compton by Four Ashes to Gatacre. Mr. King finds that the pebbles, which are derived from the rocks of all the earlier formations except those of the Ordovician System, were probably produced by the detrition of ridges of high land—now more or less buried under Trias—of which we see isolated exposures in the Abberley Hills, Trimpley, the Lickey, Nuneaton, and Charnwood Forest.

The Upper subdivision has long been famous as containing bands of a remarkable breccia, made up of angular fragments of various older rocks chiefly of igneous or 'trappoid' origin. It was made the subject of a classic memoir by Ramsay, who attributed it to the action of Permian glaciers which brought detritus from the Welsh borders and deposited it over the Midlands as a boulder-clay, to which material its generally unstratified condition and the angularity and occasional striation of its constituent fragments give it some resemblance. The breccia is best developed in the Enville Sheepwalks just outside the county, but it enters Shropshire near Gatacre Hall. It is found to thin-off when followed from south-east to north-west, and Mr. King concludes that the constituent fragments were derived from the same ridges of high land lying to the south-east which had previously yielded most of the material of the calcareous conglomerates of the Middle subdivision.

The Upper subdivision is known so far as Shropshire is concerned only in the Wyre Forest (Enville) district, but the Lower, followed apparently in some places by the Middle subdivision, is found to overlie the newer Coal Measures of the other Shropshire coalfields.

Near Oswestry[2] the beds are largely concealed by drift, but may be seen in the valley of the Dee from the bridge near Pen-y-lan to Erbistock Ferry; they are red sandstones and marls supposed to be 1,500 ft. thick.

In the Shrewsbury district similar beds conformably overlie or even pass down by alternation into the ordinary Coal Measures, as was pointed out by Murchison. Calcareous conglomerates are well-developed at Alberbury.

North of Leebotwood these red sandstones and marls were cut through by the Shrewsbury and Hereford Railway south of Condover Station.

East of the Coalbrookdale coalfield similar rocks have been exposed in the railway cuttings west of Shifnal, and contain a band of calcareous conglomerate. The more recent sinkings for coal in this district pass through these red rocks into the ordinary Coal Measures beneath—the industry migrating eastward as the shallower workings near the outcrops are exhausted and deeper sinkings become necessary.

[1] W. Gibson, *Quart. Journ. Geol. Soc.* lvii (1901), 251.

[2] Hull, 'Triassic and Permian Rocks,' *Mem. Geol. Surv.* 1869, p. 22; D. C. Davies, *Quart. Journ. Geol. Soc.* xxxiii (1877), 10

## TRIAS

The red sandstones and marls of the Trias form a wide covering which spreads over and conceals the edges of all the older rocks. Above the highest of the 'Permian' Beds of Enville we come upon a break in the history of the local rocks, for the lowest of the Triassic beds rest on the edges of the 'Permian' at a less inclination, so that we cannot tell what higher beds may lie concealed under the Trias. All we can say is that after the Enville marls and breccias were accumulated, the climate changed, and the British area was elevated and formed part of a continental tract over which desert conditions became established and persisted for a long period, giving rise to the wind-blown sands and torrential gravels of the Bunter. Subsequent depression led to the formation of land-locked lakes and the deposition therein of the stratified sandstones and marls of the Keuper, and ultimately resulted in the submersion of the whole area beneath the waters of the Rhaetic and Jurassic sea.

The Triassic rocks of Shropshire fall into the usual subdivisions as described by Dr. Hull;[1] the following table shows the sequence :—

| | |
|---|---|
| Rhaetic . . . | Limestones, shales, and marls, with marine fossils—*Avicula contorta*, *Cardium rhaeticum*, *Pecten valoniensis*, &c. |
| Keuper . . . | Green and red marls.<br>Lower Keuper Sandstone. |
| Bunter . . . | Upper Red Sandstone.<br>Pebble Beds.<br>Lower Red Sandstone. |

On the accompanying map the three divisions of the Bunter are grouped together as Pebble Beds.

The Bunter Pebble Beds and the Lower Keuper Sandstone by reason of their superior hardness generally give rise to picturesque escarpments, overlooking the softer sandstones below. The neighbourhood of Bridgenorth presents such clear sections that it may be regarded as the type-district.

### Bunter

*Lower Red Sandstone.*—In the neighbourhood of Bridgenorth this rock is estimated to have a thickness of 650 ft.; it consists of bright red sandstone varied by yellow colours and is devoid of pebbles. It forms the hill on which stands the old town, and is excellently displayed in numerous cliffs and quarry sections, the most notable feature being the intensity of the false-bedding.

Farther north the characters of all the subdivisions of both Bunter and Keuper may be studied at Shifnal, where they have been opened up along the railway.

In the north-eastern part of the county there are several sections recorded by Dr. Hull as showing the junction of the Lower Red Sandstone with the overlying Pebble Beds, as for instance at Edgmond near Newport, Stray Hill near Waters Upton, in the valley west of Great Bolas, and at Child's Ercall.

[1] 'Triassic and Permian Rocks,' *Mem. Geol. Surv.* 1869.

The canal at Stoney Ford, south-east of Market Drayton, has laid open a good section from the Lower Red Sandstone into the Pebble Beds, the former being about 80 ft. thick. But in this part of the county the Lower Red Sandstone is often scarcely distinguishable and the Bunter becomes more or less pebbly down to its base.

Near Oswestry the Bunter Beds overlie the so-called Permian rocks, but are largely concealed by drift. Sections may be seen at Knockin and Osbaston, where the Pebble Beds appear to be underlain by a representative of the Lower Red Sandstone.

*Pebble Beds.*—These are excellently exposed on the eastern side of the Severn Valley at Bridgenorth, where they form an escarpment specially marked at Apley Terrace, Pendlestone Rock, and the Hermitage; and again farther east, at Abbot's Castle Hill. The lowest bed consists of a breccia of angular fragments of various igneous rocks, vein-quartz, limestone, sandstone, and shale, and closely resembles the breccias in the so-called Permian rocks of the neighbourhood.

The subdivision as a whole is mainly characterized, however, by the presence of scattered pebbles throughout its entire thickness; and towards the base these are frequently so abundant as to constitute thick beds of shingle, the pebbles being chiefly of quartzite, red, grey, or brown in colour.

In the neighbourhood of Newport this subdivision consists of reddish-brown current-bedded sandstones with scattered pebbles; it forms a picturesque escarpment at Chetwynd Park. Market Drayton stands on pebbly hard sandstone of this subdivision, and sections have been exposed in the canal west of Cheswardine. North of Shrewsbury the beds are less pebbly and thicker, but there are few good sections; in a quarry at Longnor Hall pebbles appear to be absent. Exposures of the beds may be found at Woolston, Knockin, and Kinnersley.

*Upper Red Sandstone.*—This subdivision consists uniformly of soft bright-red sandstone devoid of pebbles; sections may be found on the slopes leading up to the escarpment formed by the basement beds of the Keuper, as in the neighbourhoods of Bridgenorth and Shifnal.

Between Shrewsbury and Market Drayton the Trias rises from the drift at Grinshill and also at Weston and Wixhill, and the upper beds of the Bunter are sufficiently hard to be used for building-stone—an unusual feature which renders the position of the base of the Keuper a matter of uncertainty; this is the case also at Harmerhill and Nesscliff, farther west.[1]

The Bunter Beds are highly important economically, by reason of their constituting a reservoir of underground water capable of yielding an abundant and excellent supply.

### Keuper

*Lower Keuper Sandstone.*—This rests upon the Bunter generally with a well-marked and abrupt divisional plane; and the lowest beds being usually more or less calcareous and conglomeratic, give rise to an escarpment, as may be seen in the neighbourhood of Bridgenorth, Patshull, and Albrighton.

The basement-beds are generally coarse, irregularly bedded, and calcareous red sandstones, containing occasional beds of red marl, and bands of conglom-

[1] Hull, op. cit. 64.

eratic cornstone. These are succeeded by various coloured building-stones, the bedding of which is more regular, while the stone itself is generally free from pebbles. The uppermost beds are brown flaggy micaceous red sandstones and marls which pass upward into the Keuper Marl subdivision.

The district lying east of Bridgenorth furnishes numerous sections of these rocks, which form escarpments trending generally northward, and reduplicated by several north and south faults with westerly downthrows. Farther north, between Market Drayton and Shrewsbury, the Keuper Sandstones form a double line of east and west scarps separated by a fault at the Hawkstone Hills, near Weston and Wixhill. According to Murchison[1] the basements beds are conglomeratic, while at higher horizons a fine white freestone has been quarried; this is succeeded by thin and regularly bedded brown sandstones. A few miles farther to the southwest, similar rocks form a range of hills which extend from Preston Brockhurst to Middle. At Grinshill the rock is a fine white freestone which has been extensively quarried; it has yielded remains of *Rhynchosaurus* which were described by Owen. Isolated escarpments of the Keuper Sandstone occur farther west, between Ruyton and West Felton; the beds appear to be thrown down by faults. At Crug Hill a fine white freestone has been quarried, and at Lane End near West Felton a fault which throws down the Keuper Marls against the Keuper Sandstone contains ores of copper, iron, and manganese; the lode has been to some extent worked.[2]

*Keuper Marls.*—The red marls occupy a considerable area in the north of the county around Wem, Whitchurch, and Market Drayton, but are generally hidden by drift. The subdivision consists of a great thickness of red marls sometimes banded and spotted with pale green colours. At the top the red beds give place to pale green and buff marls and rocky beds (the Tea-green Marls) formerly included in the Rhaetic subdivision. Occasional bands of gypsum occur, and rock-salt in the Keuper Marls has long yielded brine at the various 'wiches' in Cheshire.

### Rhaetic

The Tea-green Marls are succeeded by the fossiliferous marine limestones and shales of the Rhaetic or Penarth Beds, a fact which shows that the margins of the Keuper Marl lakes had been depressed below sea-level. Rhaetic beds probably underlie the large outlier of Lias of Ightfield, and no doubt crop out as a fringe along its margin, but owing to the general prevalence of Glacial drift few sections have been observed. However, Mr. Maw[3] described a section of Rhaetic beds exposed in a lane-cutting near Audlem Mill (just across the county boundary) immediately south of Audlem railway station. Under the Glacial drift are exposed some 24 ft. of black fissile shales containing *Axinus*, *Pullastra arenicola*, *Avicula contorta*, and *Cardium rhaeticum*. These beds overlie light buff marls, 6 ft. thick, which probably represent the Tea-green Marls of the Keuper, but the junction is obscured by a railway-bridge.

[1] *Silurian System*, 36 et seq.
[2] Hull, 'Triassic and Permian Rocks,' *Mem. Geol. Surv.* 74.
[3] *Geol. Mag.* 1870, p. 203.

## JURASSIC

The highest members of the sedimentary rocks to be met with in Shropshire are the Lower and Middle Lias beds, which form an extensive outlier ten miles long and three to four and a half broad in the neighbourhood of Prees. The rocks were first identified by Murchison[1] in 1834, and further details have been recorded by Mr. H. B. Woodward.[2] The area is largely concealed by Glacial drift, locally as much as 90 ft. thick. The ground rises at Prees to 383 ft., and between Ightfield and Whitchurch to 421 ft. above sea-level.

*Lower Lias.*—These beds were first brought to notice by sinkings—some as much as 400 ft. deep—made in search of coal between Whitchurch and Market Drayton. The supposed 'coal shale' proved by its fossils to be Lias shale and lignite, among the fossils from the beds being *Ammonites planorbis*, *A. semicostatus*, *Gryphaea*, *Lima*, *Cidaris*, *Pentacrinus*, and *Belemnites*.

The beds consist of finely laminated shales, some of which are sufficiently hard to have been tried for slating purposes. Lower Lias beds are exposed in the banks of the brook which rises north-west of Butterley Heys, south-west of Audlem; the lowest beds in the stream appear to be of Tea-green Marl (Keuper) age. The Rev. T. W. Norwood has discovered traces of Rhaetic beds and Lower Lias in a stream north-west of Heald. Mr. Woodward concludes that the Lower Lias zones represented in this district extend up to that of *Ammonites Jamesoni* and *A. Henleyi*.

*Middle Lias.*—The presence of Middle Lias at Prees was made known by Murchison in 1834. The rock has been quarried, and is exposed also in the roadsides. The fossiliferous sandy Marlstone has been opened up in graves in Prees churchyard, and is 8 to 10 ft. thick. Lower beds are exposed in the road-cutting west of Prees Church and comprise fissile sandy and micaceous beds passing down into more argillaceous strata with nodules of earthy limestone. The Middle Lias fossils of Prees include *Ammonites margaritatus*, *A. spinatus*, and *Terebratula punctata*.

## PLEISTOCENE AND RECENT

### Glacial Deposits

With these Middle Lias beds of Prees the geological history of Shropshire as written in the pages of its sediments is brought to an abrupt hiatus. There is little doubt that the subsidence which, as we have seen, set in at the close of Keuper time continued for a long period and led to the deposition of great thicknesses of sediment—the Oolitic and Cretaceous Systems—which presumably extended over Shropshire. But these and possibly other beds, the Tertiary rocks of the London and Hampshire basins, are unrepresented in our county, such of them as were deposited having long since been destroyed; so that when we resume the history as revealed in the deposits of the Glacial Epoch or Great Ice Age we find that in the interval the land had been upheaved and reduced by rain and rivers to much the same aspect of mountain, hill, and valley as obtains at the present time.

[1] *Silurian System*, 22.

[2] 'The Jurassic Rocks of Britain,' iii, 180 and 243; *Mem. Geol. Surv.*

The glaciation of Britain is one of the most recent of geological events ; and no very marked changes, except the rounding off of some asperities, the filling-in of shallow depressions, and the diversion of some of the lines of drainage, were effected by that process. The causes of the gradual extension of the arctic ice over the northern hemisphere do not concern us here ; the result was that at the maximum period a sheet of ice extended over Britain as far south as the valley of the Thames. Over Shropshire this ice was made up in the main of two confluent glaciers : one from the Irish Sea, and another from Arenig in North Wales.

The Irish Sea Glacier was produced by the confluence of ice from the south of Scotland with that from the Lake district ; it flowed southward, but divided into two lobes on reaching Wales : the eastern lobe swept over Lancashire and Cheshire and then invaded Shropshire, and finally melted away along a line which seems to have extended eastward from Much Wenlock past Bridgenorth and Enville towards Rugeley in Staffordshire ; and in its course across the district it deposited numbers of Scotch and Lake district boulders and left in its clays, sands, and gravels abundant fragments of the recent marine shells which it had swept up from the floor of the Irish Sea.

The Arenig Glacier descended from the Arenig Mountains and passing down the vale of Llangollen spread over the Shropshire plain in a south-easterly direction. As it did not cross any portion of a sea-bottom the Arenig Glacier has left in its débris no trace of marine shells.

In addition to these two main ice-flows there were doubtless smaller local glaciers which took their part in the general glaciation ; traces of these are recognizable in the Ordovician and Silurian Hills of Shelve and Clun Forest.

At present, however, it is not possible to assign each of the various Glacial deposits met with in the county to any particular ice-flow, so that the deposits must be treated somewhat in detail.

The northern part of the county is everywhere overspread with a thick deposit of gravel, sand, and boulder clay. An examination of the various sheets of the Geological Survey map shows that this drift is so thick and so generally distributed that it obscures the boundaries of the various solid rocks and renders their determination in many areas a matter of inference.

In the neighbourhood of Oswestry and Wrexham the drift attains a thickness of 150 ft. ; westward and eastward it becomes somewhat thinner ; but it overspreads much of the Coal Measure and 'Permian' ground north of Oswestry. The lowest of the drift deposits in this district[1] appears to be a stiff clay which takes its colour largely from the solid rock on which it lies ; it contains striated boulders of local and of northern origin ; many of the former are derived from the igneous outcrops in Glyn Ceiriog, on the Arans and Arenig Mountains in North Wales, and from sedimentary rocks of Ordovician and Silurian age which make up the country to the west and north-west. With these are included boulders of Carboniferous Limestone, Millstone Grit, and Coal Measure rocks, and also fragments of coal. The northern erratics are chiefly of grey and red granite from southern Scotland.

Above this boulder clay is a great thickness of stratified sands, gravels, muds, and clays. They have been dug at Old Oswestry gravel pit, and occur

[1] D. C. Davies, *Proc. Geol. Assoc.* iv (1876), 423.

at Oswestry race-course also. Over the sands and gravels is occasionally found an upper boulder clay much like the lower bed ; it was to be seen in Old Oswestry gravel-pit and at the race-course. It ranges up to 20 ft. in thickness, and contains great numbers of large boulders up to five or six tons in mass, chiefly of igneous rocks, Carboniferous Limestone, and Millstone Grit from the district lying immediately to the west. In some cases it seems likely that the ice carried up boulders from outcrops which lie at a much lower level. The boulders of Scotch granite do not appear to pass south of Oswestry ; they occur on Cefn Côch, 4½ miles north-east of Oswestry, and on the hill between Selattyn and Llanarmon at 1,400 to 1,500 ft. above sea-level. There is an entire absence of materials derived from the east.

Probably of somewhat later date are certain brick-clays extensively worked around Oswestry ; with them are frequently associated freshwater shells and peat-growths, as at Downderry Fields.

The Glacial sands and gravels are well-developed at Gloppa, two miles north-west of Oswestry, and have been described by A. C. Nicholson.[1] They have been well exposed in a large pit opened in 1888 for sand required for the Liverpool Vyrnwy Waterworks. They take the form of a ridge of eskers resting on the Millstone Grit, and ranging in height above sea-level from 900 to 1,160 ft. Shell-fragments are abundant, and a piece of a tusk of *Elephas* was found also. The bulk of the included stones are various Silurian sedimentary rocks, together with Scotch and Lake district granites, and Carboniferous rocks, many of which are polished and striated, as well as a few Chalk flints and some Lias fossils. The list of shells contains eleven arctic species, eleven British and arctic, two southern, and a large number of ordinary British species.

From this neighbourhood the drift extends across the Triassic plain for some miles eastward, but has been found by the officers of the Geological Survey to end off along a line drawn from Market Drayton on the south-west to Madeley on the north-east. Mr. Wedd[2] finds that the drift about Woore consists of sand or clay, clay capped with sand, and sand capped with clay, and takes the form of mounds and hillocks. The majority and the largest of these are sand. About Pipegate and Woore and the adjacent parts of Staffordshire large areas of continuous sand occur. The hollows between the mounds are frequently occupied by small meres or mosses.

Mr. Harker has examined specimens of many of the boulders of igneous rocks collected by Messrs. Gibson and Wedd and finds that in the Willoughbridge neighbourhood many of these are of Carrock rock, while others indicate the Lake district as their source ; and Borrowdale fragmental volcanic rocks are uniformly distributed over the whole district.

Shell fragments have been found by Mr. Wedd in both the sands and the gravels at a number of new localities, many of which near Woore are indicated on the Geological Survey map,[3] and also in boulder-clay at Dorrington and Betton. Mr. Clement Reid recognizes among them *Balanus*, *Turritella terebra* (*communis*), *Cardium edule*, *Cyprina*, *Mya*, *Mytilus*, and *Tellina*

[1] *Quart. Journ. Geol. Soc.* xlviii (1892), 86.
[2] In 'Summary of Progress' for 1898, *Mem. Geol. Surv.* 162.
[3] New Ser. 1-in. map, sheet 123 (Drift).

*balthica*; and Mr. Gibson finds that the coarse sands near Market Drayton contain *Turritella*.

Mr. Gibson[1] points out that the town of Market Drayton stands on driftless Bunter Sandstone, but that to the west the drift increases in thickness so rapidly as to suggest the existence of an old pre-Glacial bluff against which the sands and gravels of the plain have been banked up. About Hinstock a thick deposit of loamy sand prevails. Two miles north-east of Cheswardine, at the head of Coal Brook, a considerable thickness of gravel and sand incloses swamps and peat-bogs; the gravel consists largely of small pebbles of Scotch granites and some Bunter pebbles. Scotch granite boulders exceed in number those from the Lake district.

Much deep drift conceals the Lias outlier west of Market Drayton, and is in places as much as 100 ft. thick; at Whitchurch a thickness of 96 ft. of red sand has been proved. West of this town the whole country is covered with clay, sand, and gravel, overlying the Keuper Marl. There is deep drift at Penley, and just north of Ellesmere it is marked on the Geological Survey map as being 150 ft. thick, and consisting of sand; while sand, clay, and gravel overspread the whole district south of Ellesmere. Between White Mere and Crose Mere the drift sand appears to be 70 ft. thick, and at Petton the gravel is 120 ft. thick, and the position of the boundary between the Keuper Marl and the Bunter Sandstone is more or less conjectural owing to the prevalence of drift. East of Baschurch the Geological Survey map indicates the occurrence of clay and sand with Welsh detritus, and thick sand and gravel overspread the Trias at Blymhill on the eastern margin of the county.

Professor H. C. Lewis[2] observes that the drift about Whitchurch is of an undulating character, and between that town and Fenn's Bank consists of lenticular hills of clay full of boulders; and a large peat-bog near the latter called Whixall Moss he thought was an old lake. The same description of drift prevails at Bettisfield. Between Welsh Hampton and Ellesmere, hummocky drift with limestone boulders is well-developed and was regarded by Professor Lewis as of a typical morainic aspect; it extends south of the mere at Ellesmere and is full of boulders of volcanic ash, granite, sandstone, and especially Carboniferous limestone, many of which are glaciated. Of the 'kettleholes' between the mounds, some are still occupied by water, others by bog, while some are dry.

Miss Eyton[3] made some valuable observations on the drifts of that part of the county lying nearer to Shrewsbury. The lowest bed appears to be a stiff blue clay containing rounded pebbles and Lias fossils; this occurs for some miles west of Shrewsbury. At Dunn's Heath, 3 miles north of that town, it was proved in a well to be over 100 ft. thick. It comes to the surface at Leaton and Petton and extends westward to the hills of Nesscliff and Grinshill. It has yielded *Fusus antiquus* at the Old Woods clay-pit. This blue clay appears to be overlain by moundy, coarse, unstratified gravel, seen at Merrington Green, 6 miles north of Shrewsbury; it contains Silurian and Carboniferous Limestone detritus, and fragments of *Tellina*, *Astarte*, and

[1] In 'Summary of Progress' for 1900, *Mem. Geol. Surv.* 131.
[2] *Glacial Geol. of Great Britain and Ireland* (1894), 293, 294.
[3] *Notes on the Geol. of North Shrops.* (1869); also *Geol. Mag.* 1870, pp. 106, 545.

*Cardium*. Similar gravel occurs in a ballast-hole west of Baschurch Station, and fine sand and gravel, stratified, and devoid of shells, form a mound at Leaton. This drift becomes more prevalent farther north, and the hollows between the mounds and ridges are occupied by small meres and peat-mosses.

Other more distinctly shell-bearing gravels are described by Miss Eyton[1] as indicating a derivation from the north; they contain Silurian, Carboniferous Limestone, and Lias detritus, pink and grey granite boulders, coal-fragments, pieces of red sandstone, and flints. Shell-fragments are very abundant in these gravels in a pit between the Union and the Welsh Bridge at Shrewsbury, and there are indications of the extension of similar gravel for some miles farther down the Severn Valley. Gravels of like character occur at Ketley Brook, New Lodge Farm near Lilleshall, and Orleton near Wellington; also at Hadley, where on digging the foundations of the church in 1854 specimens of *Turritella* and *Tellina* were obtained. Moundy gravel may be seen in the valley of the Worf, between Beckbury and Ryton.

In the *Silurian System* (1839) Murchison has recorded many observations on the nature of the drift of parts of the county. He gives details of a section[2] on the right bank of the Severn at Preston Hall, four miles west of Shrewsbury, in which clay, loam, and sand, containing an admixture of local débris with northern granite pebbles, overlie gravel and sand of purely local origin; and he came to the conclusion that generally the local drift underlies that containing northern erratics and fragments of recent shells.

About Merrington Green, seven miles north of Shrewsbury, the drift is generally a heavy clay, though close by there are shell-bearing gravels. Shell-fragments occur in gravel on the northern slopes of the Wrekin, and on the banks of the Severn west of Shrewsbury at Shelton Rough, where they were observed by Darwin; and this observer found them also in gravel-pits between Shrewsbury and Meole Brace. The genera of shells found include *Buccinum* (Whelk), *Dentalium*, *Littorina* (Winkle), *Cardium* (Cockle), *Cyprina*, *Turritella*, *Venus*, *Astarte*, and *Donax*.[3]

Professor H. C. Lewis thought that the hills at Pontesbury resemble *roches moutonnées* in their rounded outline; and records that east of Hanwood station a stiff red boulder-clay exposed in a cutting contains Eskdale and Criffel Granite, Carboniferous Limestone, and Arenig felsite boulders, and is overlain by 50 ft. of coarse gravel and yellow boulder-clay and purely local erratics due to glaciers coming down from the north-west. About Upper Pulley are to be seen boulders of white and of red granite, and still more abundantly of felsite. A boulder of Criffel granite 2½ ft. long lies at the cross roads at Bagstow Hill. One mile north of Dorrington there is a kame-like ridge of gravel with northern granite boulders; at Stapleton and at Walford the drift is hummocky.

Much of the surface of the Coalbrookdale coalfield is overspread by extensive deposits of sand and gravel largely derived from the Trias, as observed by Prestwich.[4]

Sandy drift extends from Lightmoor northwards through Dawley and Horsehay to New Lawley, New Dale, and Ketley; it has frequently been

[1] *Geol. Mag.* 1870, p. 106. [2] *Silurian System*, 526. [3] Ibid. 533.
[4] *Trans. Geol. Soc.* (Ser. 2), v, 413. See p. 460.

used as a source of moulding-sand at the foundries. Beds of coarse gravel and sand are common in many of the valleys and on many of the hills from Lilleshall to Bridgenorth, notably in Willey Park, Lightmoor Old Park, at New Lawley, and at Wombridge, and extend eastwards to Sutton and Brockton ; the deposit varies rapidly in thickness, and has evidently in some cases filled up old hollows and valleys sometimes 100 ft. deep. Many shells of recent species occur, including *Ostrea* and *Turritella*.

The drift at Strethill and Buildwas, near Coalbrookdale, has been made the subject of an exhaustive study by Mr. Maw.[1] At Strethill it is about 210 ft. thick, and consists of 70 ft. of clean sand and shingle, overlying a similar thickness of alternating gravel, silt, and clay, which in turn rests on another 70 ft. of clean sand with some gravel. All the beds contain numerous pebbles of local rocks, and also Chalk flints, Lias fossils, and Lake-district and Scotch granites. Throughout these drift-beds occur fragments of recent marine shells — including oyster, cockle, mussel, and whelk — of which Mr. Maw gives a complete list. The Buildwas beds are less productive of shells, and are chiefly of sand and gravel.

Mr. C. J. Woodward[2] has described a gravel-mound 463 ft. above sea-level at Fox Hill Field, New Lodge, Lilleshall, which contains recent marine shells, Lias fossils, and granite pebbles.

Terraces of gravel drift, chiefly derived from the Trias, border the Severn below Bridgenorth, and contain in addition to local material pebbles of granite, Chalk flints, and Lias fossils. They have yielded shell-fragments at gravel-pits at St. James's ; while farther down the valley, at Quatt, the drift is chiefly of Bunter sand and loamy gravel.

At Ryden Hill near Benthall there is an isolated knoll of clean sand and fine gravel at 530 ft. to 600 ft. above sea-level ; and a similar deposit at Willey Park lies at 350 ft. to 400 ft. above the sea, while at Burton near Much Wenlock, at 750 ft. to 800 ft., there is a deposit of loamy sand and gravel with boulders of Eskdale granite and Lake-district felstone.[3]

A thick deposit of sand and gravel with boulders of Criffel granite spreads over the Trias and 'Permian' rocks of the neighbourhood of Bobbington, south-east of Bridgenorth ; numbers of boulders are to be seen at Bowling Green east of Claverley, and stragglers are to be found along the Severn Valley as far south as Bewdley.

There is a notable absence of northern drift over most of the Silurian districts in the south-west part of the county. According to Murchison[4] the Onny valley contains much coarse gravel full of boulders of the Ordovician rocks, especially the ashes, lavas, and dolerites of Shelve and Corndon, and the Stiper quartzite. At Wistanstow the detritus derived from the Shelve district becomes finer and is supplemented by an accession of material carried down the Stretton Valley from the Longmynd and Caradoc Hills. At Ludlow, where the Onny and Teme unite after passing through the Silurian escarpments, there is a further addition of débris from these rocks, but a little farther to the south-east, along the Teme Valley, this type of drift rapidly gives place to one made up largely of Carboniferous, dhustone, and

[1] *Quart. Journ. Geol. Soc.* xx (1864), 130.
[2] *Rep. Brit. Assoc.* for 1865, Sections, p. 79 ; also *Geol. Mag.* 1865, p. 567.
[3] D. Mackintosh, *Quart. Journ. Geol. Soc.* xxxv (1879), 425.
[4] *Silurian System*, chap. xxxvii.

Old Red Sandstone detritus from the north. Red clay full of subangular blocks of Clee Hill dhustone has been recently cut through at many points on the Birmingham Waterworks pipe-trench between Ludlow and the Clee Hills.

In the neighbourhood of Clun on the south-west borders of the county several boulders of Silurian rocks from Central Wales have been noted by Mr. Luff[1] as occurring at heights ranging up to 1,327 ft. above sea-level.

Fuller details as to the dispersion of Criffel, Lake-district, and Arenig boulders over much of the north-eastern and eastern parts of the county will be found in Mr. Mackintosh's paper and map.[2]

Very few striated rock-surfaces have been noticed in Shropshire, but Mr. Mackintosh reports a doubtful case on Haughmond Hill showing movement from north-west to south-east ; and another instance has been recorded on Llanymynech Hill by Mr. Morton,[3] where the striae show a flow from north-east to south-west.

### Post-Glacial Deposits

Succeeding the undoubtedly glacial deposits we find some which are later and appear to have been laid down at the close of the Glacial period, when the rivers were probably still swollen with much flood-water, and carried down much of the Glacial drift and laid it down at lower levels. These deposits take the form of gravel, sand, and muds filling old lakes or broad valley-bottoms, or forming terraces along the margins of the present streams, though at some height above the modern flood-level and alluvium. They have occasionally yielded remains of mammalia long since extinct in Britain, and similar relics have been found in caves also, as, for instance, the hyena and rhinoceros bones discovered in a cave at Aldon near Onibury, recorded by Murchison.[4] There is a large exposure of such later drift at the confluence of the Severn and the Vyrnwy north of the Breidden Hills, and another, drained by the River Rea, between the Long Mountain and the Shelve district. On some of these alluvial tracts large peat-bogs, occupying probably in some cases the sites of ancient lakes, are found, as for instance, Whixall Moss, between Prees and Ellesmere (see p. 43), where the peat is in places very thick, and contains trunks of oak, birch, and fir.[5] Another such district, known as the Weald Moors, between Wellington and Newport, has been drained and is now cultivated. The local etymology supports the idea that much of this was once a lake from which occasional islets arose.[6]

With these deposits the history of Shropshire is resigned by the Geologist and carried on by the Archaeologist.

[1] *Rep. Brit. Assoc.* for 1882, p. 247 ; for 1883, p. 140 ; for 1885, p. 322.
[2] *Quart. Journ. Geol. Soc.* xxxv (1879), 425.
[3] *Proc. Liverpool Geol. Soc.* iii (1876), 123.
[4] *Silurian System*, 553–4.
[5] Ibid. 559.
[6] Ibid. 559–60 ; also Eyton, *Geol. of North Shrops.* 77.

# PALÆONTOLOGY

IN the domain of vertebrate palæontology Shropshire has four pre-eminent claims to special recognition. Firstly, it is the only locality in England, and not improbably in Europe, from which has been obtained the skull of a primeval salamander with the original contours still preserved. Secondly, it is the type and apparently the only known locality for the remains of the remarkable Triassic reptile *Rhynchosaurus*, the typical representative of the order Rhynchocephalia. Thirdly, the Carboniferous Limestone of Oreton, Farlow and other localities in the county contains a notable assemblage of fossil fishes, several of which are the types of species. Finally, it contains at least one representative of the oldest known fish-fauna in the world.

In this connection it should be mentioned that the fossil fishes from the Silurian bone-bed and the Old Red Sandstone near Ludlow are very commonly regarded as products of the county. As a matter of fact however the great majority of these specimens were obtained from the Hereford side of the river, and are accordingly referred to in the volumes devoted to the latter county. In the *Catalogue of Fossil Fishes in the British Museum* Dr. Smith Woodward records very few of these ancient fishes from Shropshire.

The one Shropshire fossil reptile is the aforesaid *Rhynchosaurus articeps*, the only known member of its genus, from the Keuper of Grinshill. This remarkable reptile, an ally of the tuatera (*Sphenodon punctatus*) of New Zealand, was described by Sir R. Owen[1] in 1842 on the evidence of a skull in the museum at Shrewsbury; much information was added with regard to its structure and affinities by Professor Huxley[2] in 1887 from specimens now in the British Museum.

The skull of the labyrinthodont *Loxomma allmanni*, to which allusion has been already made as the only English example known in the entire group showing the original contour, was obtained in an ironstone band of the Coal Measures of Dawley near Coalbrookdale, and presented to the British Museum by Mr. George Maw. The species and genus were however originally named from specimens obtained in the Lower Carboniferous Ironstone of Gilmerton near Edinburgh. *Loxomma*, it may be mentioned, represents a group of primeval salamanders specially characterized by the very large size of the orbits of the eyes and the compressed and trenchant form of the teeth; these latter displaying

[1] *Trans. Cambridge Phil. Soc.* vii. 355. [2] *Quart. Journ. Geol. Soc.* xliii. 689.

the complicated internal structure from which the members of the group derive their name of labyrinthodonts. The length of the skull is about 10 inches, so that the creature must have rivalled a small crocodile in size.

Fish-remains appear to be scarce from the Shropshire Coal Measures, but a species of an extinct genus of lung-fish, *Ctenodus murchisoni*, typically from Staffordshire, is recorded from the Upper Coal Measures of the county under consideration.[1]

Of the fishes from the Carboniferous or Mountain Limestone of Oreton and Farlow the two first, *Cladodus mirabilis* and *C. striatus*, belong to an extremely primitive group of Palæozoic sharks—the Ichthyotomi—characterized by the imperfect calcification of the vertebral column. Both species are typically from the Mountain Limestone of Ireland. Passing on to the rays, we find a species (*Petalodus flabellula*) of a widely spread Palæozoic genus described on the evidence of a tooth from Oreton in the British Museum.[2] Another member of the same family (*Petalodontidæ*), typically from Ireland, and known as *Ctenoptychius serratus*, also occurs in the county. In the allied family *Psammodontidæ*, characterized by the thin, flat and quadrangular crushing teeth, a species of the type genus has been described as *Psammodus salopiensis*[3] on the evidence of a specimen of the dentition in the British Museum from Farlow.

The sharks of the Palæozoic family *Cochliodontidæ*, which were allied to the modern Port Jackson sharks, but had a more specialized type of crushing teeth, are represented in the county by *Helodus simplex*, a species first described from Staffordshire. Two species, *Psephodus salopiensis* and *P. dubius*, of another genus of the same family are known solely by teeth from Oreton. The same is the case with *Deltodus rugosus*, but *Sandalodus morrisi*, which, like the last, also belongs to the same family, is known from Gloucestershire, although typically from Oreton. Yet another member of the same large family, *Deltoptychius gibberulus*, is known from the Oreton Carboniferous, but its type locality is Ireland. In the allied family of the *Cestraciontidæ* (Port Jackson sharks) the extinct genus *Orodus* is represented in the county by the widely spread *O. ramosus*, teeth of which have been obtained from Oreton, Cleobury and Breton near Clee Hill.

Of fish-spines which may be referable either to sharks and rays, or to fishes more nearly allied to the modern chimæra or king-of-the-herrings, several types have been recorded from Oreton. These and other Palæozoic spines, it should be observed, are described under generic and specific names quite distinct from those based upon the evidence of teeth, although there can be little or no doubt that some of such titles are synonyms of others. Of the type of spine, or 'ichthyodorulite,' classed as *Ctenacanthus*, there appear to be three specific modifications represented in the Mountain Limestone of Oreton, respectively known as *C. major*, *C. denticulatus* and *C. sulcatus*, although none of these was

[1] See *Cat. Foss. Fishes Brit. Mus.* ii. 255. [2] Ibid. i. 45. [3] Ibid. p. 105.

named on the evidence of Shropshire specimens. In reference to a suggestion that the spines known as *Ctenacanthus* are really identical with the fishes described on dental evidence as *Orodus*, Dr. Smith Woodward makes the following remarks: 'It is certainly noteworthy that in Britain the largest species of this [*Ctenacanthus*] type occur in the Bristol Carboniferous Limestone, where also are discovered the largest teeth of *Orodus* ; and the " species " are most numerous at Armagh, where *Orodus* exhibits the greatest variety.' The discovery of a single specimen showing both teeth and fin-spines would, of course, settle the question once for all.

Of the spines classed as *Homacanthus* the British Museum possesses a single specifically undetermined Shropshire specimen.

Spines of another type from Oreton are referred to the 'species' of *Stichacanthus* respectively known as *T. cæmansi* and *T. tortworthensis*, of which the former is typically from Belgium and the latter from Gloucestershire. Other spines may indicate a nearly allied but perhaps generically distinct form.

Of the remarkable primitive armour-clad fishes of the Old Red Sandstone collectively known as Ostracodermi, of which the most familiar representatives are *Pteraspis* and *Cephalaspis*, very few remains appear to have been found actually within the limits of the county.

Some of these are referable to the section Antiarcha and form the types of a species of the genus *Bothriolepis*, although originally described by the late Sir Philip Egerton[1] under the name of *Pterichthys macrocephalus*. Not improbably this *B. macrocephala*, of which the type specimens (now in the British Museum) were obtained from the Upper Old Red Sandstone of Church Quarry, Farlow, is nothing more than a local race of the Scottish *B. hydrophila*. These fish, it may be observed, were strange, oval, armour-plated creatures, with a single pair of arm-like appendages, and present a curious superficial resemblance to the crustaceans known as *Apus*.

The other fish from the Old Red Sandstone of Farlow, of which the type specimens are also in the national collection, is a member of the group of fringe-finned ganoids, of which the sole existing survivors are the bichir (*Polypterus*) and the allied *Calamoichthys* of the rivers of Africa. To this fish Dr. Smith Woodward has given the name *Sauripterus anglicus ;* it is distinguished from the typical and well-known *S. favosus* of the Old Red Sandstone of Scotland by the inferior size of its scales, these and a single tooth being its only known remains.

From the Upper Ludlow beds of the Silurian system—which yields some of the oldest known fish-remains—the small fish-spines described as *Onchus murchisoni* are recorded by Dr. Smith Woodward[2] from Shropshire as well as from Herefordshire.

The dorsal shield of one of the Ostracoderm fishes obtained by Mr. J. E. Lee in 1859, from the Lower Ludlow beds of Church Hill near

[1] *Quart Journ. Geol. Soc.* xviii. 103. [2] *Cat. Foss. Fishes Brit. Mus.* ii. 94.

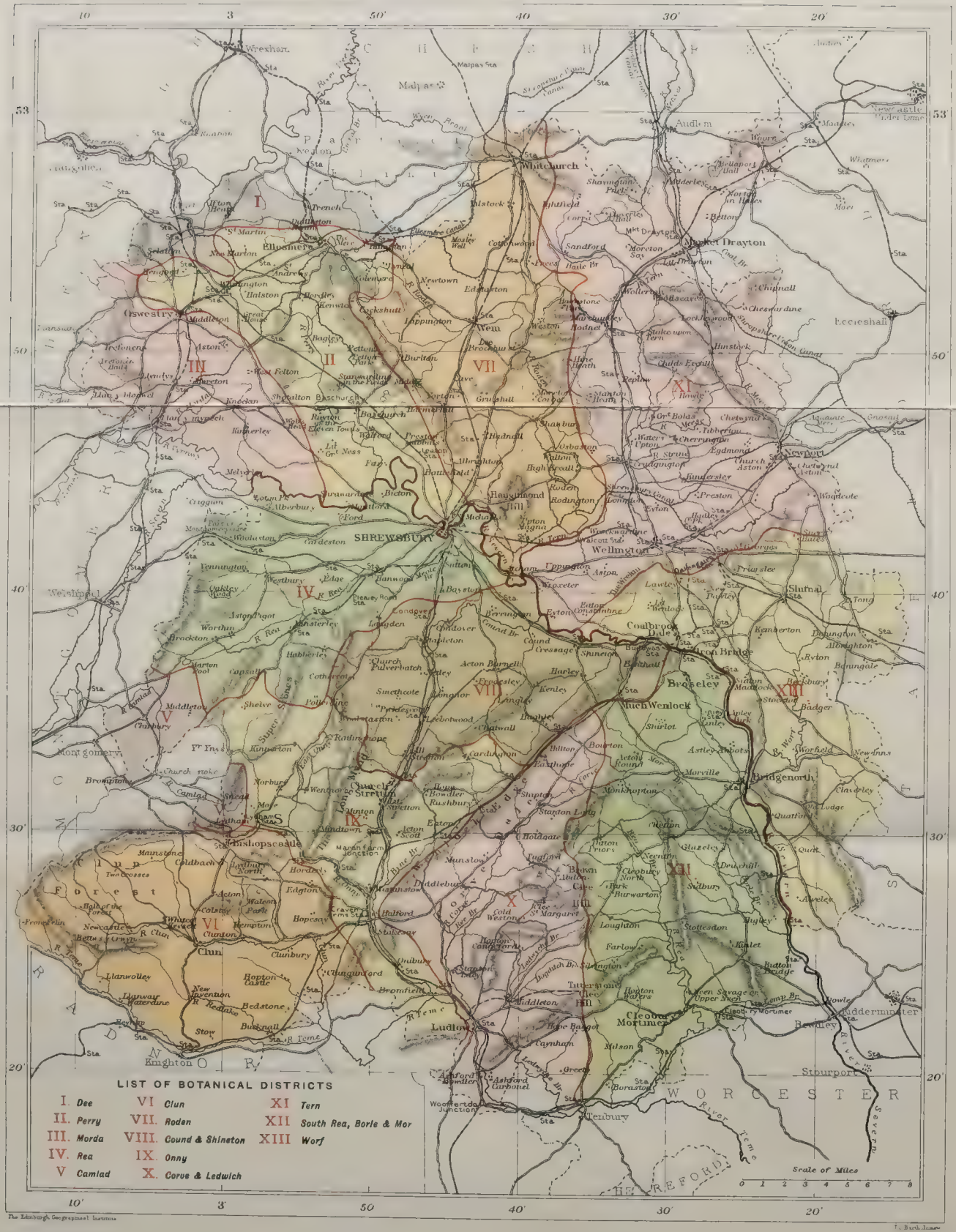
Leintwardine, and forming the type of the species now known as *Scaphaspis ludensis*, is included among the fossils of the county in Mr. Harrison's *Geology of the Counties of England* (where the species is called *Cyathaspis banksi*). In Messrs. Woodward and Sherborn's *British Fossil Vertebrata* the specimen is said to be from Hereford. The species is one of the very oldest of British vertebrates.

## ADDENDUM

Since the foregoing was in type, Mr. W. F. Gwinnell has published[1] a note on the skeleton of a small *Plesiosaurus* from the White Lias of Westbury-on-Severn. The specimen was discovered on the beach in 1904 and is now in the British Museum.

[1] *Quart. Journ. Geol. Soc.* lx. 359 (1907).

# BOTANICAL DISTRICTS.



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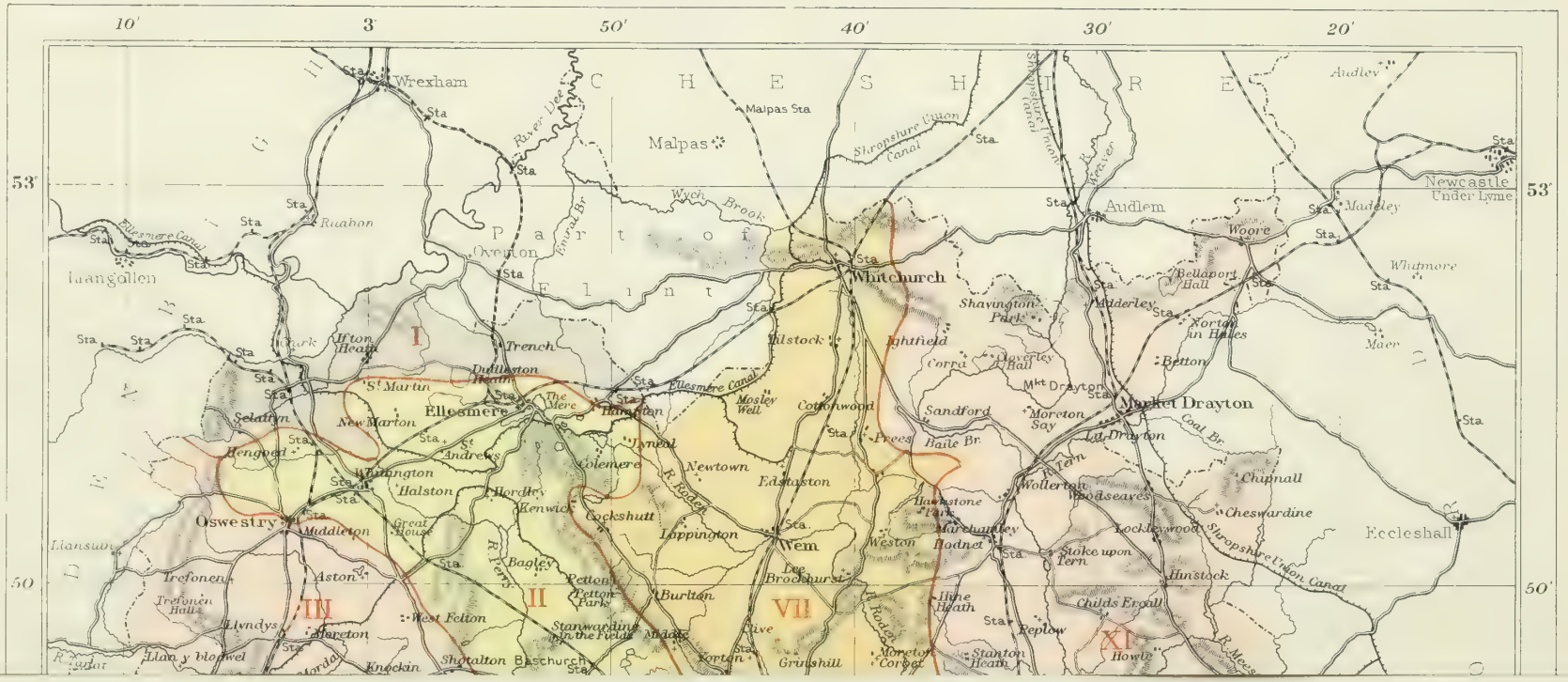

# BOTANY

SHROPSHIRE comprises an area of 841,167 acres. It lies between 52 deg. 20 min. and 53 deg. 4 min. north latitude, and between 2 deg. 17 min. and 3 deg. 14 min. west longitude.

The late Mr. Hewett Cottrell Watson, who was the first English botanist who dealt in a comprehensive and philosophical manner with the laws governing the distribution of plants in Britain, divides the country in accordance with the river basins into eighteen provinces, No. 5 of which he calls the Severn Province, and includes in it Gloucestershire, Worcestershire, Warwickshire, Staffordshire, Shropshire, Herefordshire, and Monmouthshire. He again divides these eighteen provinces into thirty-eight sub-provinces, and these he further divides into 112 counties and vice-counties. In this order Shropshire stands in sub-province XV, named North Severn, which also includes Staffordshire; and in the 112 counties and vice-counties its position is No. 40. Beyond these divisions Mr. Watson did not proceed, leaving the further work to local botanists.

For many years no steps were taken to reduce Shropshire into smaller divisions on the principles he laid down. In 1891, however, it became obvious to a small band of residents in the county that if a new flora were to be compiled it was essential that it should be carried out on the principles laid down in Mr. Watson's great work. Up to the date above mentioned there had existed two societies in the county, 'The Severn Valley Naturalists Field Club,' founded in 1863, and 'The Caradoc Field Club,' founded in the same year, both of which had hitherto covered the same ground; but in 1893 they wisely determined to amalgamate, and assumed the title of 'The Caradoc and Severn Valley Field Club.' This associated nearly every working botanist of the county, and it was determined that an annual report should be printed and called 'The Record of Bare Facts,' which, in addition to other natural history departments of work, included botanical records. A division of the county was then decided upon according to the river beds, as will be seen in the accompanying map.

Before proceeding to give the details of this division of the county into districts, with the physical features characterizing them, some account should be given in a work like the present of those individuals, both natives of, and residents in the county, who have devoted their attention to its flora in past years, to whom the present generation owe a deep debt of gratitude.[1]

[1] We are indebted to many friends, whose names space forbids us to give, for the facts embodied in these notes, especially to Messrs. Britten and Boulger's *Biographical Index of British and Irish Botanists*, and the *Dict. Nat. Biog.*

Rev. Littleton Brown was the son of Jeremiah Brown, of Bishop's Castle, in which town he was born in 1699; he matriculated at Balliol College, Oxford, 30 June, 1715, aged sixteen, took his B.A. 1719, and M.A. 1722; elected F.R.S. He became intimate with Dillenius, who in his *Historia Muscorium* speaks of him as one who sent him several mosses, algae, and lichens found near Norbury, Bishop's Castle, and Ludlow; and when writing to his friend Dr. Richardson, describes a botanical excursion with Brewer and Littleton Brown in that neighbourhood. 'We observed,' he says, 'little remarkable by the way. *Alcea tenuifolia* [*Malva moschata*] is very common that way.' . . . 'We saw here and there in Shropshire *Sphondylium foliis angustioribus* [*Heracleum Sphondylium*] still very plentiful there, which I believe to be a different species. Near Norbury, four or five miles before we came to Bishop's Castle, grows *Pimpinella tenuifolia*, of Rivinus.' In another letter dated January, 1727, he writes: 'Mr. Brown, an ingenious young clergyman, last year found the *Muscus absinthii folio* [*Trichocolea tomentella*] in flower about Bishop's Castle. It flowers in April, has a pretty thick and long stalk, almost like *Lichenastrum*, n. 3 Raii Syn. 110, divided into four at the top, and is a true *Lichenastrum*. The stalk comes out of a hairy tube or *vagina*, somewhat longer than in other species. He also found in head *Bryum roseum*, which ought to be removed to the tribe *Capitulis Pendulis*; another new *Bryum*, *foliis Juniperi*, a new willow, with peach-like leaves, horny beneath,' &c. [Sir James Smith, *Correspondence*, ii, 131, 135; and *The Dillenian Herbarium* by Druce and Vines]. In the Diary made by Dillenius of his tour through the west country, when he was accompanied by Littleton Brown, he refers to seeing 'about Shrewsbury *Plantaginella*' [*Limosella aquatica*] and among barley '*Lamium*, 9, p. 241,' which is the first county record of *Galeopsis speciosa*. 'On and in the hedges *Fumaria vulgari similis*,' which is probably a form of *F. officinalis*, and '*Fumaria alia flore albicante apice purpureo* . . . syn. p. 204. n. 2.' This is the earliest reference to the plant recently described by Mr. H. W. Pugsley as *F. purpurea*, and the first British record. At the roots of elm which had been cut down he noticed '*Fungus*, 5 Syn. p. 11'=*Polyporus squamosus*.

From Shrewsbury to Bishop's Castle *Pyrus Aucuparia* was observed as a native tree. Also *Euphrasia gracilis* (which he called *E. minor*) for the first time in Britain, and he says it is frequent in hilly situations in Shropshire. 'Near Norbury on a grassy rocky place *Pimpinella tenuifolia*,' which is *P. Saxifraga*, var. *dissecta*; '*Millefolium minus*,' which is a small form of *Achillea Millefolium*; *Serpyllum subhirsutum*, and also the same with 'flore minore purpureo,' the first being *Thymus Serpyllum*, the latter, perhaps the first British record of *T. Chamaedrys*. Beyond Norbury, in a boggy meadow, '*Hierac. Pulmon. dictum*'=*H. umbellatum*; '*Polygala palustris*,' the first British record of *P. serpyllacea*, Weihe, and '*Genista aspalath*,' which is the Petty whin, *Genista anglica*, as a prostrate form. On the Stiperstones they gathered *Parmelia saxatilis*, var. *Sphaerophoron fragile*, *Cetraria aculeata*, *Lecanora tartarea*, *Lycopodium inundatum*, *Galeopsis Tetrahit*, var. *bifida*, and *G. speciosa*. *G. Tetrahit* var. in all the cornfields about Bishop's Castle, and what was probably *Brassica campestris* in the high fields near Bishop's Castle called the Wouers [G. C. Druce].

Littleton Brown, in a letter to Dillenius dated 14 January, 1726, records from Shropshire the following plants:—*Helvella Mitra*, Liddum; *Ithyphallus impudicus*, Kempton to Aston; *Usnea ceratina*, Stiperstones; *Alectoria jubata*, var. *chalybeiformis*, Ach. Stiperstones; *Asplenium Adiantum-nigrum*, Ludlow; *Phegopteris Dryopteris*, Bishop's Castle; *Cystopteris fragilis*, on the Stiperstones; *Oenanthe crocata*, *Mentha rotundifolia*, *Galeopsis speciosa*, about Bishop's Castle; *Ranunculus peltatus*, in the Teme and Corve, Ludlow; *Potentilla palustris*, var. *villosa* (Lehm), near Oakley; *Rubus saxatilis*, Combe Floyd; *Sedum Forsterianum*, Borough ditches four miles from Bishop's Castle; *Verbascum Blattaria*, Ludlow Castle; *Diplotaxis tenuifolia*, Ludlow walls; *Cardamine impatiens*, *Vicia sylvatica*, *Trifoliun scabrum*, and *Dianthus deltoides*, about Bishop's Castle; *Hypericum montanum*, between Corston and Munslow; *H. elodes*, 'in ye great bog on Lyddum's Heath;' *Colchicum autumnale*, in Corvedale, plentiful; *Narthecium ossifragum*, 'on ye side of Longment' [? Longmynd]; *Juncoides sylvaticum*, Bishop's Castle, with *Pyrus Aucuparia* and *Vaccinium Vitis-idaea*, on the Stiperstones; *Lathyrus montanus*, var. *linifolius*, 'in ye woods on Old Church Moor, near Stretton;' *Solidago Virgaurea*, and *Athyrium Filix-foemina*, var. *convexum*, in Combe-Floyd; *Lycopodium alpinum* and *Listera cordata*, 'on the top of ye Stiper Stones;' and a narrow-leaved form of *Convolvulus minor*, from Bishop's Castle.[1a]

William Withering (1741–99) was the son of an apothecary at Wellington, where he was born 28 March, 1741; took his degree of Doctor of Physic at the University of Edinburgh in 1766, and some time after settled at Stafford. In 1774 he removed to Birmingham, where he spent the remainder of his life. In 1776 he published the first edition of his *Systematic Arrangement of British Plants*, which went through two other editions, the last appearing in 1796. He was elected a F.R.S. and F.L.S., and was a Member of the Royal Academy of Sciences at Lisbon. He died 6 October, 1799.

[1a] Altogether, seven interesting letters are published in *The Dillenian Herbaria*, by Druce and Vines, Clarendon Press, Oxford (1907), and the book also contains references to other Salopian plants. [G. C. D.]

Robert More (1703–80) of Linley took his B.A. Camb. in 1724, and his M.A. in 1728. He was a F.R.S., and a member of the council of that body. He was a pupil and friend of Linnaeus, who makes frequent mention of him in his works, and paid him a visit in Shropshire. He is said to have been the first to introduce larch into Shropshire, if not into England, some fine specimens of which are still to be seen at Linley. He was born in 1703 and died 5 January, 1780.

John Freeman Milward Dovaston (1782–1854), M.A., son of John Dovaston of West Felton, where he was born 30 December, 1782 ; educated at Shrewsbury School under Dr. Samuel Butler. He became an intimate friend of the Rev. W. A. Leighton, with whom he pursued the study of botany and other branches of natural history. He died at West Felton 30 August, 1854. Leighton acknowledged his co-operation in his *Flora of Shropshire*. The variety of the yew known as the Dovaston yew was discovered by him and grown at his house in the county.

Rev. Edward Williams (1762–1833), M.A., son of Edward Williams of Eaton Mascott, was a Fellow of All Souls', Oxford, 1787. He became perpetual curate of Battlefield and Uffington, 1786, and rector of Chelsfield, Kent, 1817. He was an able antiquary, and a zealous botanist, and compiled a list of plants found by him in Shropshire, the MS. of which is in the possession of Lord Berwick, of Attingham Hall ; the Rev. W. A. Leighton was permitted to make a copy which he utilized in his *Flora of Shropshire*. Mr. Williams is said to have been the first to discover *Elatine hexandra* in Britain, August, 1798. He died at Coton Hill, Shrewsbury, 19 January, 1833.

George Jorden (1783–1871), born at Farlow in 1783, entered the service of Mr. Seagar, surgeon, of Bewdley. He assisted Mr. Edwin Lees, F.L.S., in his *Botany of Worcestershire*, and Leighton in his *Flora of Shropshire*. He discriminated *Epilobium macrocarpum* (*Ann. and Mag.* viii. 246), and noticed but did not name the deep yellow-flowered form of *Melampyrum pratense*, the var. *hians*, Druce, and was a contributor to the *Phytologist* (i–iv, New Ser.). He died at Bewdley in 1871, and his herbarium is in the museum of that town.

Rev. William Allport Leighton (1805–89), B.A., of Luciefelde, Shrewsbury, only son of William Leighton, was born at Shrewsbury 17 May, 1805 ; was articled to a solicitor, but on the death of his father in 1825, determined to enter the church ; matriculated at St. John's College, Camb., where he graduated B.A. in 1833. He was a schoolfellow of Charles Darwin, who shared with him a strong love of botanical research. His first important work, *A Flora of Shropshire*, based on the Linnaean system, appeared in 1841, and was regarded by the greatest authorities of the time as the best county flora that had appeared. He then commenced the study of lichens, and in 1851 the Ray Society printed his *Augiocarpous Lichens, Elucidated by their Sporidia*. In 1872 appeared his *Lichen Flora of Great Britain and the Channel Islands*, a third edition of which appeared in 1879. Besides these, his chief works, he contributed valuable articles to the *Journal*, and the *Transactions* of the Linnæan Society, of which he was for some years a Fellow. *Opegrapha Leightonii*, Crombie ; *Lecidia Leightoniana*, Larb. ; *Agaricus Leightonii*, Berk. ; *Sphaeria Leightonii*, B. and Br.; and *Calloria Leightonii*, Phill., were named after him. He presented his lichen herbarium to Kew, and a number of duplicates to the Shrewsbury Museum. He died 25 February, 1889, at Shrewsbury.

Charles Cardale Babington (1808–95), M.A., F.R.S., F.L.S., &c., son of the Rev. Joseph Babington, of Ludlow, was born at that town 23 November, 1808. He graduated B.A. Camb., 1830, M.A. 1833, elected a F.L.S. 1830, F.R.S. 1851 ; appointed Professor of Botany at Cambridge, 1861, was the author of numerous works on botany, and is so widely known that it is unnecessary to give a lengthened notice of him here. He died at Cambridge 22 July, 1895, having bequeathed his herbarium of nearly 50,000 sheets and his library to the University of Cambridge. This herbarium is rich in plants from the county.

Charles Robert Darwin (1809–82), LL.D., F.R.S., F.L.S., was the son of Robert Waring Darwin, M.D., of Shrewsbury, where he was born 12 February, 1809 ; educated at Shrewsbury School ; graduated M.A. Camb. 1837; LL.D. 1878, became a F.R.S. 1839, and F.L.S. 1854. Appointed Naturalist to H.M.S. *Beagle* 1831, which position he held to 1836. Further notice here of so distinguished a man is unnecessary. He died at Down, Kent, 19 April, 1882.

Edward Elsmere (1808–78), of Astley and Shrewsbury, was born at Almond Park, near that town 15 March, 1808. He was a diligent collector of plants found on his farm at Hadnall, where he resided from about 1822 till 1845. Most of these are recorded by Leighton in his *Flora of Shropshire*. He died at Shrewsbury 6 July, 1878. His herbarium was presented to the Shrewsbury Museum by his son.

Rev. Thomas Butler (1806–86), canon of Lincoln Cathedral, F.R.G.S., was the only son of Dr. Samuel Butler, formerly head master of Shrewsbury School, and afterwards bishop of Lichfield. He was born in Shrewsbury 28 November, 1806, where he was educated under his distinguished father, whence he proceeded to Cambridge. In 1829 he was ordained deacon, and priest in 1830. After an absence of many years he returned to Shrewsbury in 1876, where he spent the remainder of his life, devoting much attention to the botany of Shropshire, and contributed a large number of

plants to the herbarium of the Shrewsbury Museum, of which he was appointed honorary curator. He died at Shrewsbury in 1886. His herbarium is in the possession of his family.

William Penny Brookes (1806–95), born at Much Wenlock, 13 August, 1809; became a Licentiate of the Society of Apothecaries 1831, and Member of the Royal College of Surgeons 1870. During the intervals of his extensive practice he collected the flowering plants of his neighbourhood, most of which are recorded in Leighton's *Flora of Shropshire*. He was the founder of the 'Olympian Games' at Much Wenlock, was a great benefactor to the museum in that town, and died there 11 December, 1895. His herbarium is in the possession of his family.

Thomas Campbell Eyton (1809–80), F.L.S. and F.Z.S., son of Thomas Eyton, of Eyton near Wellington, where he was born 13 May, 1835. He was an accomplished naturalist, his last and chief work being *Osteologia Avium*, published 1871–8. He gave some attention to botany, and was a correspondent of the Rev. W. A. Leighton. He died at Eyton 25 October, 1880.

Henry Bidwell (1816–68), M.D., born at Albrighton, near Shifnal, 8 July, 1816, local secretary to the Botanical Society of London, and Fellow of the Botanical Society of Edinburgh. He resided at Wellington, and corresponded with Leighton when the latter was engaged on his *Flora of Shropshire*. He died 13 March, 1868, at Albrighton. He had a herbarium, the destination of which is not known.

Francis Dickinson (1816–1901), son of the late Barnard Dickinson of Beverley, Yorkshire, was born at the Dale House, Shropshire, 4 January, 1816, and resided in 1847 at Buildwas Abbey near Coalbrookdale, and afterwards at Callaughton, near Much Wenlock. It was during his residence at these places that he gave attention to the local flora, contributing many habitats to Leighton's *Flora*. He died at Crockham Hill, Edenbridge, Kent, 24 August, 1901.

William Walsham How (1823–97), bishop of Wakefield, was born 13 December, 1823, at College Hill, Shrewsbury. In his earlier days he found relaxation from his parish duties in botanical work. He died 10 August, 1897.

Miss Harriet Moseley (1836–67), daughter of Walter Michael Moseley, of Buildwas Park, contributed to Leighton's *Flora of Shropshire*, to E. Lees' *Botany of Malvern*, and *Botany of Worcester*. A collection of drawings of British plants by her is in the Department of Botany, British Museum.

Alfred Marston (1835–96), chemist, of Ludlow, was the author of *A Guide to the Ferns, and many of the Rarer Plants Growing round Ludlow*, 1870.

William Edward Beckwith (1844–92), son of the Rev. Henry Beckwith, of Eaton Constantine, was born 17 December, 1844, and educated at Bridgnorth, and King's College, London. He gave attention to the flora of his native county, and contributed to the *Journal of Botany*. He died 22 July, 1892, at Shrewsbury.

Robert Anslow, born at Wellington, was the author of a pamphlet entitled *The Study of Mosses: with a List of the Mosses of the Wrekin and its Environs*, published in 1871. He died at Cheltenham in December, 1893.

Of those botanists who were temporary residents in Shropshire, and added to the knowledge of its flora, the following deserve mention :—

Rev. Thomas Salwey (1791–1877), B.D. Camb., 1826, F.R.S. 1824, was for many years rector of Oswestry. He was a contributor to the *Annals and Magazine of Natural History*; wrote 'The Botany of the Parish of Oswestry,' for William Cathrall's *History of Oswestry*. He contributed to the *Transactions of the Botanical Society of Edinburgh* 'Lichens of Shropshire and the Channel Islands.' Borrer named a Lichen after him *Lecidea Salweii*. He died at Worthen, Sussex, 3 December, 1877. His herbarium was presented by the late Mr. Alfred Salwey, his son, to the Ludlow Museum.

Arthur Aikin (1773–1854), was born at Warrington, 19 May, 1773, the son of John Aikin, M.D.; was an original member of the Geological Society, 1807, of which he was appointed secretary in 1811; afterwards secretary of the Society of Arts from 1817 to 1840; elected F.L.S., 1818; discovered *Astrantia major* in Shropshire, 1824. He died in London, 15 April, 1854.

John Jeudwine (1774–1835), M.A. St. John's College, Cambridge; appointed second master of Shrewsbury School, 1798, which post he held for twenty-nine years, and died 22 October, 1835. He left a collection of flowering plants, but for the most part without localities.

Since the above was written, there have to be added the names of three other Shropshire botanists including that of the chief contributor to this article.

Richard de Gylpyn Benson (1856–1904), the eldest son of Mr. R. B. Benson, M.R.C.S., of Pulverbatch, was born in 1856, educated in Shrewsbury under Mr. Edward Calvert, LL.D.,

studied for the law and practised for some time as a solicitor in London. Owing to ill-health he returned to this neighbourhood in 1886, and resided at Pulverbatch until his death, which took place on 24 February, 1904. Mr. Benson was an ardent and astute botanist, and a member of the Caradoc and Severn Valley Field Club, to which he rendered valuable services, continued, more or less intermittently, almost up to the last. He made a special study of the Rubi and the mosses, and formed a considerable herbarium. Some of the latest of his work comprised 'A list of Flowering Plants' for the *Handbook of Church Stretton* (published 1904), and one for the present article, both of which had, unfortunately, to be completed and prepared for the press by another hand. Mr. Benson also did a large amount of work for the proposed new Flora of Shropshire, under the auspices of the above-mentioned club.

William Phillips (1822–1905), F.L.S., was the ninth child and fourth son of Thomas and Elizabeth Phillips of Presteign. He was born in that town on 4 May, 1822, and at an early age came to Shrewsbury, to the business of his elder brother, becoming ultimately a partner in the well-known firm of James, Edward, and William Phillips, tailors. Although he lacked the advantages of an academic education, he became, even in his younger days, an accomplished correspondent, as is attested by his earliest letters. Always of a studious turn of mind, he acquired a sufficient knowledge of the classical and modern languages to be able to make use of them in his scientific work. Mr. Phillips had, successively, many hobbies, but took up botany in the early 'sixties, and in a few years became a specialist, and an acknowledged authority on Fungi. He was the author of *The Manual of British Discomycetes* (International Scientific Series) and of several papers of interest, including 'The Breaking of the Shropshire Meres,' 'The Fungi of our Dwelling Houses, &c., &c.,' which, with others, have appeared in the *Transactions* of the Caradoc Field Club both before and since its amalgamation with the Severn Valley Field Club. Mr. Phillip's later years were much occupied in antiquarian pursuits, the more important of his papers appearing in the *Transactions* of the Shropshire Archaeological and Natural History Society. His contributions to the present Flora are noted on other pages of this work. He died 23 October, 1905.

William Beacall (1837–1905), the son of John Beacall of Castle Street, Shrewsbury, was born in this town in the year 1837. He succeeded his father and uncle as the proprietor of an old-established currier's business at Shrewsbury and Bewdley, was a freeman of the town, and justice of the peace. Mr. Beacall was an enthusiastic botanist, and a co-worker with the late Messrs. Beckwith and Phillips. The phanerogams were his especial study, and he contributed a large number of records to the flora of the county. He was an archaeologist, well versed in the antiquities of the town and neighbourhood. He died at his residence, Sunfield, in October, 1905.

## NOTES ON THE GEOLOGY OF SHROPSHIRE IN RELATION TO ITS FLORA[1]

It is obvious that there must be an intimate connexion between the botany of a county and its geology; but the two sciences have been so little studied in conjunction, that it is extremely difficult to trace that connexion in any detail. It is well known to field geologists that certain habits of growth of plants and certain species cling to certain underlying rocks; and, locally, such indications are of great use to the geologist in mapping the superficial boundaries of the rocks; but it is by no means safe to trust implicitly to these indications, for there are many anomalous occurrences which give one pause in making generalizations. An instance of this occurs when comparing the flora of the Wrekin with that of the Caradoc Hill. In these hills the geological structure is very similar. There is a central axis composed of very old volcanic rocks which is flanked by a band of quartzite. On the Wrekin the volcanic rocks are covered by a flora from which the ling (*Calluna vulgaris*) is practically, perhaps entirely, absent; and its attendant the wimberry (*Vaccinium Myrtillus*) is but sparsely represented. As soon, however, as we descend the western slope and reach the flanking quartzite the ling and wimberry become very plentiful. On Caradoc the reverse is seen, for there ling and a profusion of wimberry occur upon the volcanic rocks, while on the quartzite on the north-eastern slope both species practically disappear, and the boundaries of the latter rock are to be traced fairly accurately by the occurrence of rushes.

In contradistinction to the above, the following facts connected with the same two species do not appear to be anomalous.

Geologically, the Longmynd is composed of three groups of rocks: (*a*) Grey slaty rocks along the eastern side, and as far into the hill as the Carding Mill at Church Stretton. (*b*) Purple slates and

[1] By E. S. Cobbold, F.G.S.

volcanic grits in a wide central band through the whole length of the hill. (*c*) Conglomerates, grits, and sandy slates along the line of the Portway, and forming the highest summits and western slopes.

Ling and wimberry are absent from the grey rocks and gorse (*Ulex europaeus*) is very plentiful; upon the purple slates the three species are fairly equally prevalent; and upon the more distant grits ling and wimberry are in great profusion, while gorse is practically absent.

In dealing with the connexion between the geology and the flora of the county it is clear that a great number of detailed observations are necessary before any sound generalizations can be arrived at, and it is only with a view of referring to this subject which appears to be of great interest that these remarks have been put together.

The county may be conveniently divided on topographical and geological grounds into two portions; a northern area, which is practically a plain and largely occupied by Triassic (New Red Sandstone) rocks; and a southern or hilly area where much older rocks of very varying characters (Old Red Sandstone, Silurian, Ordovician, Cambrian, and Archaean) are found.

In the northern area the rocks have been but little disturbed by earth movements, while in the southern there are innumerable instances of large faults and dislocations which have brought together rocks of different degrees of hardness. To these is largely due the diversified nature of the surface, with its variety of soils, slopes, elevation, and plant habitats.

Another marked difference between the two areas is caused in great measure by the distribution of the glacial deposits. In the north of the county they almost completely mask the underlying solid rocks, and take a large share in what I venture to call the obstructed drainage of the country. The principal rivers of the northern plain have, indeed, established their courses in well-marked valleys, but the minor streams often seem in doubt which way they should run, and there are many hollows without a free outlet for the water that are now occupied, or have in the past been occupied, by meres or mosses. The advent of the northern ice, with its burden of boulders, clay, and sand, seems to have obliterated the ancient drainage of the plain, and to have so levelled up its inequalities as to render possible the occurrence of the meres and mosses with their interesting flora.

These glacial deposits to a certain extent invade the valleys of the hilly southern portion of the country, but naturally do not produce so much effect upon its surface, and the more rapid descent of the streams has effectually cleared away any obstructions that may have existed.

In the southern portion of the county the Wenlock Limestone is responsible for the inclusion of many species that love a calcareous soil, while the wooded crest of the ridge and its disused quarries give a foothold to many other plants of the original forest land that would otherwise have been eradicated by cultivation.

The long geographical line of Wenlock Edge, stretching for 20 miles from Coalbrookdale on the north-east, to Craven Arms on the south-west, and curving southwards thence to Ludlow, forms a convenient datum from which the remainder of the southern area may be described.

Immediately east of it is a second wooded ridge composed of Upper Ludlow sandy rock, with thin bands of limestone near Wenlock, which thicken and form a considerable mass near Craven Arms and extends thence to Ludlow and is called the Aymestrey Limestone.

Following this on the east is Corvedale with much rich pasture land, the soil being largely derived from the underlying marls and sands of the Old Red Sandstone.

East of Corvedale are the two Clee Hills, composed of Old Red Sandstone, with a capping of Carboniferous and Basaltic rocks. Both these elevated tracts support a moorland flora.

Beyond the Clee Hills Old Red Sandstone occurs again in force, giving place to Carboniferous rocks, clays, and flaggy beds in Wyre Forest in the south-east corner of the county. The streams draining from the high land of the Clee Hills, eastward to the Severn and southward to the Teme, both of which are here running at a comparatively low level, have cut deeply into the surface, and their sides are almost invariably covered with forest vegetation.

West of the Wenlock Edge datum-line the structure of the country is more complicated.

A few miles away stand out the Stretton Hills, consisting of the Caradoc Range and the Longmynd, with altitudes varying from 1,000 to 1,700 ft.

The Caradoc Range is composed of Uriconian volcanic rocks in the neighbourhood of Church Stretton, and in its continuation to the north-east and to the south-west of softer sandstones and shales of the Caradoc Sandstone series. It is here that the most intense folding and faulting of the rocks is seen, and the isolated summits of the harder rocks stand out in prominent pyramidal form and support a flora with a somewhat moorland aspect; while the softer sandstones form rounded elevations and the shales have been cut out into narrow wooded valleys, where the vegetation has a peaceful sylvan character.

Along the same line of broken country and beyond the Severn to the north-east stands the Wrekin, more important from its isolation than from its height or area, where the ancient volcanic

rocks again stand out. Its altitude is, however, sufficient to add a few high-level forms to the flora of the botanical districts in which it lies, and very possibly its woods and rocks may affect the number of mosses and fungi recorded from them.

The great dislocation known as the Stretton fault lies immediately west of the Caradoc Range, and consists of a number of fractures branching in and out from one another in a continuous chain reaching from Lilleshall Hill on the north-east, through Caradoc Hill and Hopesay and away to Kington in Radnorshire to the south-west.

West of Church Stretton is the Longmynd, with a considerable area of elevated moorland and an appropriate flora. The rocks are very ancient slates and grits and their altitude is in large measure due to their insolubility.

West again of the Longmynd comes the hill district of the Stiperstones and Shelve composed of soft shales interspersed between beds of sandstone and volcanic rocks of Ordovician age. The higher levels have again the characters of moorland, while the deep hollows are well-wooded and forest-like.

The northern margin of the hill district adjoins the north Shropshire plain, but southwards round Clun and Bishop's Castle there is a considerable area of high land occupied by sandy mudstones of the Silurian and a few isolated patches of Old Red Sandstone. The higher levels here have also a wild moorland aspect and flora, but the valleys are rather less rugged and a larger proportion of land has been brought under cultivation. Still there are many nooks and corners that are in a semi-wild condition.

There are two isolated patches in the northern half of the county that are of fairly high elevation where the underlying solid rocks have an effect upon the flora :—(1) From Llanymynech to Oswestry the Carboniferous Limestone attains considerable development and produces some calcareous-loving species. (2) East of the Wrekin is the Coalbrookdale coal-field, the workings of which have so altered the aspect of the country that many species must have been almost exterminated, while the huge slag heaps from the furnaces may be expected to provide a new class of habitat for at least the humbler forms of vegetation.

With these preliminary remarks it is possible to indicate the special features of the separate botanical districts.

## THE BOTANICAL DISTRICTS

There is probably no inland county of England that possesses a larger number of streams than Shropshire, and consequently lends itself to a very complete division into botanical districts based on the river basins. The magnificent River Severn, which ranks first among those of England in regard to its length, and is only exceeded by the Thames and the Humber in the extent of country which it drains, has its rise in Plinlimmon, and passing through the principality of Wales for nearly a third part of its course, enters Shropshire on the western boundary near Melverley. Thence it runs mainly in an easterly direction to Shrewsbury, but takes a very serpentine course, especially at the Isle, where it describes a circuit of nearly six miles, returning to the point of its departure within a quarter of a mile. At Shrewsbury, again, it encircles the town, leaving an isthmus of only two furlongs wide. It then takes a south-easterly direction to Iron Bridge, where it passes through a narrow gorge, at which point it is said that if a barrier 50 ft. high were constructed the greater part of North Shropshire would be converted into an inland lake of large extent. From a little below Iron Bridge it pursues a course almost due south to Bewdley, near which town it passes out of the county into Worcestershire. This great artery receives in its course innumerable tributaries, the more important of which are as follows :—

The Vyrnwy, having received the Morda, which rises a few miles west of Oswestry, enters the Severn near Melverley. The Perry rising in the hills north of Oswestry, passing Halston and Fitz, joins the Severn at Mytton. The Rea issues from Marton Pool and flows by Minsterley, Hanwood, and Meole Brace, joining the Severn at Shrewsbury. The Tern proceeds from near Market Drayton to Stoke-on-Tern, receiving the Roden at Walcott, and falls into the Severn between Atcham and Wroxeter. Cound Brook rises in Cwmdale or Cormbedale, near Church Stretton, and, augmented by a number of small streams, passes through Condover, to which village it gives its name, and enters the Severn on its right bank near the village of Cound. Sheinton Brook rises near Holt Preen and joins the Severn near Sheinton. The Worf, rising near Sheriff Hales and receiving several streams, passes by Ruyton and Beckbury and enters the Severn at Bridgnorth. The Mor rises at the Marsh, Much Wenlock, runs past Acton Round and Morville, and falls into the Severn on the right bank, nearly opposite Dudmaston Hall. The Borle rises near Upton Cressett, passes Glazeley, and enters the Severn about a mile above Upper Arley on the right bank. Some distance to the west of Borlebrook is the South Rea, which rises north of the Brown Clee hill, in the vicinity of

Ditton Priors, passing Neenton, Duddlewick, Neen Savage, and joins the Teme near Morley Hall. This last-named river, which enters the Severn below Worcester, receives several important streams in the south-west part of Shropshire, which are as follows:—After entering the county near Knighton (Radnorshire) it flows in an easterly course towards Ludlow, and is joined by the Clun at Leintwardine, which latter drains the Black Mountain and the forest of Clun; it next receives the Onny at Bromfield, which rises in the neighbourhood of Corndon (Montgomeryshire) and the southern end of the Stiperstones, and is named the West Onny, being joined at Eaton by the East Onny, which rises on the west side of the Longmynd near the Bridges, and then continues by Plowden and Horderley to a point a little north of Halford, where it receives the Quinny, which rises on the east side of the Longmynd, and the Byne, which flows from Cardington and Rushbury. The main stream of the Onny flows past Onibury, joining the Teme at Bromfield. Another tributary, the Corve, which drains Corve Dale, also joins the Teme near Ludlow. One more tributary of the Teme to be named is the Ledwyche, the gathering ground of which is the neighbourhood of Stoke St. Milborough, and passing Caynham joins the Teme near Tenbury.

There are two detached areas in south-west Shropshire which are divided from each other by the Montgomeryshire Hill—Corndon—and are drained by the River Camlad, which enters the Severn near Berriew, in the last-named county.

One more small area in the extreme north-west of the county remains to be mentioned, drained by tributaries of the Ceiriog and by other small streams falling into the River Dee.

From the above particulars the reader will be able to comprehend the position of the botanical districts shown upon the accompanying map the name of each district being taken from the river which drains it. They are these:—

(1) Dee; (2) Perry; (3) Morda; (4) Rea; (5) Camlad; (6) Clun; (7) Roden; (8) Cound and Sheinton; (9) Onny; (10) Corve and Ledwyche; (11) Tern; (12) South Rea, Borle and Mor; (13) Worf.

### 1. The Dee

This district is of small area, being about twelve miles long from east to west, and varying in width from one and a half to three miles from north to south. North of Oswestry it is composed of Carboniferous rocks (limestone, millstone grit, and coal measures), and north of Ellesmere of Triassic beds (marls and sandstones). The district is so much enveloped in glacial deposits (sands, gravels, and boulder clay) that the solid geology does not have much effect upon the soils. Where the boulder clay is at the surface there are naturally heavy soils, while the drift gravels give sandy stretches of country, occupied largely by forest trees, especially conifers, on the sandy heaths. The older Carboniferous rocks form the higher portions of the district, where traces of an elevated, if not high moorland, flora may be expected. The lower ground north of Ellesmere partakes somewhat of the character of the land of the meres, having low-lying swamps, more or less artificially drained, separated by ridges frequently composed of drift gravels. Welshampton Moss and other boggy grounds have yielded a large number of good plants.

### 2. The Perry

Except for the high ground occupied by Carboniferous rocks near Oswestry, this district, which is some fifteen miles long and five to six broad, is almost entirely upon the North Shropshire plain. The surface is largely occupied by Glacial Drift, and it is here that we have the greatest development of the meres and mosses. The underlying formation is almost entirely of Triassic Age, but except towards Shrewsbury it does not show up much at the surface. The hollows occupied by the meres and mosses are frequently separated from one another by steep ridges or mounds of gravels and sands, usually well wooded.

### 3. The Morda

This district, some eighteen miles long by six broad, contains some of the high ground occupied by Carboniferous rocks near Oswestry. In parts the limestone of that formation attains a considerable development, and possibly carries a calcareous flora. The remainder of the district partakes of the nature of the North Shropshire plain, and is to a large extent covered with Glacial Drift lying upon Triassic sandstones and marls. It is drained by the Morda and a few small independent tributaries of the Vyrnwy and Severn.

### 4. The Rea

This district is some twenty miles long and eight to ten broad, and contains the basin of the Rea. It has a very diversified configuration, and partakes somewhat of the nature of the North Shropshire plain near its northern boundary, where the underlying rocks are of Carboniferous and

Permian Age; west of Westbury it trenches somewhat upon the hill area of the Breiddons, where Ordovician grits and volcanic beds crop out; south-west from Westbury the district embraces a part of the Long Mountain, which is composed of Silurian rocks (more or less sandy mudstones), giving rise to a generally retentive soil; the wide valley in which Worthen lies is underlain by more clayey Silurian rocks, but they are a good deal obscured by superficial accumulations and peaty deposits; southwards of Minsterley is a portion of the Shelve Hill district, where hard rocks of volcanic origin and of Ordovician Age alternate with the soft shales, and produce an elevated tract seamed with deep wooded valleys, which follow the general north-west and south-east strike of the rocks. The district also embraces about half the length of the Stiperstones ridge, with its well-known Ordovician quartzites, and a high level flora; this is succeeded eastward by a long slope occupied by Upper Cambrian shales with a heavy clay soil, and some rugged outcrops of older igneous rocks, which attain considerable development at Pontesford Hill.

### 5. The Camlad

Two small portions of the drainage area of this river come within the boundaries of the county; one, having its centre at Chirbury, is about seven miles long and six miles wide; and the other, in the neighbourhood of Lydham, measures about four miles by one mile. Those parts of the district lying east of Chirbury are occupied by Ordovician rocks, and present a somewhat rugged surface, with steep, wooded hill slopes and narrow valleys; and that to the west of Chirbury is a good deal drift-covered, and is similar to the valley of Worthen, the underlying rocks being clayey Silurian mudstones.

### 6. The Clun

Included with the actual drainage area of the Clun River there are in this district a number of small areas draining into the Teme, which forms the southern border of the county. The district measures some twenty miles by five in its largest diameters, and is almost entirely occupied by Silurian mudstone rocks with overlying patches of Old Red Sandstone. The former rocks are somewhat sandy in the high-lying portions of Clun Forest, and are very much jointed and broken up, so that they give rise to an open and free-draining soil on the slopes. The high land of Clun Forest carries a moorland flora, and on some of the more level hilltops there are patches of clay and peat. East of Bishop's Castle the general surface falls to a comparatively low level, and the superficial deposits are largely of a gravelly nature, with very little really heavy land. Towards Hopesay the country is more broken, with some rather lofty hills composed of hard Ordovician and older rocks brought up through the Silurian mudstones by the southward prolongation of the Stretton fault.

### 7. The Roden

In addition to the drainage area of the Roden, affluents of which rise near Whitchurch, this district includes the basin of the Hadnall Brook and one or two other small streams running into the Severn at or below Shrewsbury, as well as a small part of the basin of the Weaver, a Cheshire tributary of the Dee. It measures some twenty miles from north to south, and has a maximum width of about ten miles; it is almost entirely underlain by Triassic marls and sandstones, and forms part of the North Shropshire plain. There is a large amount of Glacial Drift, but the underlying Sandstone rocks are brought to the surface at Grinshill, Pim Hill, and Hawkstone. In the north the country partakes of the nature of the land of the meres, and just on the borders of the county is the thick deposit of peat in Whixall Moss, almost exactly upon one of the watershed lines. A part of the famous inlier of Lower Lias clays occurs near Prees in this district, and in the south we have an outlier of hard slaty and sandstone Longmyndian rock at Haughmond Hill. In the central part of this district about Wem and Hadnall there is a good deal of sandy soil, and this is especially noticeable under the south slopes of Hawkstone Hill.

### 8. The Cound Brook

With the basin of the Cound are grouped for convenience the minor areas of the Belswardine (i.e. Sheinton) Brook, emptying into the Severn near Sheinton, and the Buildwas Brook, which flows from Much Wenlock through Farley Dingle to the Severn at Buildwas. The district has an east and west length of some fifteen miles, and a width of about seven or eight; its surface is very diversified owing to the variety of rocks that are brought together by the great fractures and uplifts connected with the Stretton fault.

The northern part of the district has something of the nature of the North Shropshire plain; it is underlain by Triassic, Permian, and Carboniferous rocks; these make but little show at the

surface, which is largely occupied by Glacial clays and gravels. The gravels appear to compose some of the rounded hummocks about Condover and Dorrington, but those in the valley near Church Stretton are more frequently made of Boulder Clay. On the west and south is a portion of the Longmynd table-land and associated hills, with hard slaty rocks, much moorland, and a decidedly upland flora. North-east of Church Stretton the district embraces a part of the Caradoc Range, with its lofty summits and hard Uriconian rocks of volcanic origin. Stretching north-east from these are the wooded hills of Acton Burnell and Harnage, composed of Ordovician sandstones, with shales in the intervening valleys. Eastward of this line we have the valley of Apedale, where the Wenlock Shale of the Silurian helps to form a heavy soil, though the Glacial Drift again obliterates many of its special surface features. At Farley Dingle and Wenlock there is a considerable development of Wenlock Limestone, which has a marked effect upon the flora.

### 9. The Onny

This basin has somewhat the form of the letter Y, and embraces an area still more varied in topographical features than the last. Its greatest length, some eighteen miles, is from Shelve Hill on the north-west to Ludlow at the southern extremity, and the right-hand arm of the Y reaches from near Craven Arms up Apedale to Longville and Cardington, a distance of about ten miles.

At the extreme north-west corner is a part of the Ordovician area of Shelve and the Stiperstones, with the hard volcanic rocks and quartzites of that age forming the rugged ridges, while the softer shales are hollowed out into narrow valleys. A decidedly upland flora covers the heights. About Norbury, Wentnor, and Mindtown there is a wide open valley floored by Silurian shales, with a considerable patch of limestone at the former village.

Some rounded elevations of Upper Longmyndian Sandstone and sandy slates occur near Ratlinghope. Between Wentnor and Church Stretton stretches the long table-land of the Longmynd proper, with a moorland surface and hard slaty rocks. A tongue of Wenlock Shale with a clayey soil is let down by faulting between the older rocks in the neighbourhood of Minton. From Wistanstow, through Marsh Brook, round Acton Scott and as far as Hope Bowdler and Wall, the Ordovician sandstones and accompanying shales are responsible, in conjunction with powerful faults, for many a wooded slope and much sandy and loamy soil. West and north of Hope Bowdler there is another area of hill land with hard Uriconian rocks of volcanic origin. East of Acton Scott and Hope Bowdler is the clayey valley of Apedale on the Wenlock Shale, and this stretches as far as the lower slopes of Wenlock Edge, which, with its capping of thick limestone, forms the eastern boundary of the district. The southern extremity is occupied by Silurian Limestone ridges near Craven Arms, with a small area of Old Red Sandstone and Upper Ludlow sandy rock towards Ludlow.

### 10. The Corve and Ledwcyhe

This district, which is nearly twenty miles long from north to south, and some ten miles in maximum width, has a less complicated geological structure than district 9, the rocks being far less torn by fractures and fault lines. Its north-western border lies on the eastern or dip slope of the Wenlock Limestone ; a parallel ridge of wooded heights follows where the rocks are of Upper Ludlow Age, and consist of sandy mudstones and flags, with calcareous courses, developing in the neighbourhood of Craven Arms and Ludlow into a thick bed of limestone (the Aymestrey Limestone). The Old Red Sandstone series occupies almost the whole of the remainder of the district, and consists of some marls and clays along the line of the Corve River, with sandstone and conglomeratic beds at the higher levels towards the Clee Hills, the summits of which are occupied by small patches of Carboniferous and Basaltic rocks, and have a moorland aspect.

### 11. The Tern

This district is some twenty miles long rrom north to south, and roughly ten miles wide. In the extreme north the basins of some small affluents of the Weaver are included, but otherwise it is exclusively occupied by the basin of the Tern and two or three small streams draining into the Severn between Atcham and Eaton Constantine.

North-west from Market Drayton there is a considerable area occupied by lower Lias clays ; near Wellington there is an outcrop of Uriconian and Cambrian rocks about Wrockwardine, Uppington, and in the Wrekin, and a stretch of Carboniferous rocks runs north-east towards Lilleshall. The rest of the district is underlain by Triassic marls and sandstones, forming part of the North Shropshire plain, and is largely covered with Glacial Drift.

There are considerable areas of peat and marshy ground between Wellington and Market Drayton, owing to the slight general fall of the surface and also to the ancient drainage channels being more or less obstructed by drift accumulations.

### 12. The South Rea, Borle and Mor

This district contains the drainage areas of one or two affluents of the Teme east of Tenbury, and those of a few minor affluents of the Severn, which forms its eastern boundary.

The greater part of the area is occupied by Old Red Sandstone rocks; but there is a fringe of Carboniferous beds reaching from Broseley on the north to the Forest of Wyre in the south-east corner, and some little development of red sandstones near Bridgnorth. The western border of the district passes over the summits of the Clee Hills, which have a moorland aspect, and the central part of the area has a rolling woodland character with steep-sided narrow valleys.

### 13. The Worf

This district is twenty-two miles long from north to south, eighteen miles wide through Coalbrookdale and Shifnal, but narrows to six miles or less at its southern end. It is occupied by the basin of the Worf, which has its head waters about Shifnal and discharges into the Severn near Bridgnorth, and it includes also the drainage areas of some minor streams both north and south of this point. The comparatively low-lying valley of the Severn provides an admirable outlet for the streams and they have established themselves in well-defined valleys, the steep sides of which are a good deal covered with wood. The valleys of the Worf and its tributaries lie almost entirely on Triassic sandstones, somewhat masked to the north by Glacial Drift, but the red rock gives a decided tone to the surface both in colour and feature.

About Coalbrookdale the Coal Measures give rise to some cold clayey soil, and north-west of this lies the Wrekin area with its composite rock structure and consequent diversity of surface.

## PHANEROGAMIA AND PTERIDOPHYTA

*The Flowering Plants and the Vascular Cryptogams [Ferns &c.]*

The records here given represent the work of a large number of botanists, extending over a century, or, if a few plants mentioned by Ray and others of the older authors be included, the period would embrace two centuries.

The foundation of the present list is Leighton's *Flora of Shropshire*, 1841, a work highly commended at the time of publication, and the first to bring the county, in its botanical aspect, prominently before the scientific world. Since the above date many species have been added to those enumerated by Leighton, and our knowledge of the distribution of all has been considerably extended.

The preliminary lists were drawn up by the late Mr. R. de G. Benson in 1902, and are completed and brought up to date by the present writer. The genus Rubus is the work of Mr. Benson assisted by the Rev. W. Moyle Rogers. Thanks are due also to many of our leading English botanists for having at one time or another kindly aided in the elucidation of critical species.

The order followed is that of the *London Catalogue* (ed. 9), but the names of the plants do not coincide in every case. The omission of common species from some districts implies only that they have not been recorded, and not that they are known to be absent.

Of the Ferns, some species are abundant, such as the bracken on hills and moors, the lady fern in woods, the male fern, &c., while many others are widely distributed though occurring but sparsely in their respective habitats. A very few years ago the bracken could be seen in a spot not much more than a mile from the centre of Shrewsbury. *Asplenium Ruta-muraria* grows on the old town-walls, and the polypody on the Abbey Church and other walls. *Osmunda* has vanished from some, perhaps from most, of the spots which it once frequented.

The positions and physical features of the meres and mosses of the county are indicated in the Notes on the Geology of Shropshire in Relation to its Flora, p. 55; the Botanical Districts, Nos. 1, 2, and 7, pp. 58, 59; and the introductory notes to the Algae, p. 78. In addition to the meres named in the last may be mentioned another Blackmere, and Oss Mere, or Osmere, both in the north, near Whitchurch; another Marton Pool, near Baschurch; Shomere, close to Bomere; Hencote Pool, two miles north of Shrewsbury; Sundorne Pool, and Tong Pool. There are also several other pools of more or less interest botanically.

The expanses of water and bog afford a characteristic flora, of which the following are a few examples :—

The very rare *Scheuchzeria palustris* has been observed on Welshampton Moss, the borders of Ellesmere Mere, and at Bomere Pool. In the last locality it was so mercilessly hunted for some

twenty years or more ago that it is believed to be now extinct. *Carex limosa* stands on record for the first-named two stations above, and a small bog near Shrewsbury. It has not been observed recently. *Andromeda Polifolia* is mentioned in How's *Phytologia Britannica*, 1650, p. 106, as occurring 'in great quantity at Birch in the moores of Ellesmere' (Lt. *Fl.*). It still grows there, and in several other places in the vicinity; also on Whixall Moss, the moss near Cold Hatton, and Ellerdine Moss, all farther to the east. *Myrica Gale* was known to occur only in the north and north-west until it was found in recent years at a solitary station on the extreme east near the border. There is reason to believe that it extended, at a remote period, much more to the south. *Narthecium Ossifragum* is found in eight of the thirteen county divisions; *Vaccinium Oxycoccos* and *Parnassia palustris* are found in nine. All the above are absent from the south and from Herefordshire. *Butomus umbellatus* and *Typha angustifolia* are recorded for seven of the divisions; *Triglochin palustre* and *Scirpus lacustris* for eight; *Typha latifolia* and *Eriophorum vaginatum* in nine; *Drosera*, one or other of the species, and *Menyanthes trifoliata*, in ten; *Potentilla Comarum* grows in suitable habitats in all parts. *Iris pseudacorus*, *Sparganium ramosum* (agg.), and other damp-loving plants are abundant locally.

The following is a summary of the plants enumerated under the above groups :—

| | Species | | Sub-species, varieties, forms and hybrids | | |
|---|---|---|---|---|---|
| British plants . . . . . | 954 | + | 189 | = | 1,143 |
| Naturalized, Escapes, Introductions, &c. . | 121 | + | 3 | = | 124 |
| | 1,075 | + | 192 | = | 1,267 |

The Characeae will be found under Algae.

## PHANEROGAMIA

### Ranunculaceae

Clematis Vitalba, L. 2, 3, 5, 8–13
Thalictrum minus, L. *Lt. Fl.* 12
— flavum, L. 3, 4, 7–9, 11, 13
var. spaerocarpum, Lej. 8, 13
Anemone nemorosa, L. 2–5, 7–11, 13
— ranunculoides, L. 13
— apennina, L. 10
Adonis autumnalis, L. 8, 9, 13
Ranunculus circinatus, Sibth. 4, 7, 10, 11, 13
— fluitans, Lam. 2, 4, 7, 8, 12, 13
var. Bachii (Wirtg). 8
— pseudo-fluitans, Hiern. 8
— trichophyllus, Chaix. 2, 4, 10, 11, 13
var. radians. 4
— Drouetii, Godr. 3
— heterophyllus, Web. ex parte. 7, 13
— peltatus, Schrank. 3, 7–11, 13
forma elongatus. 4, 11, 13
var. truncatus (Hiern.). 13
var. floribundus (Bab.). 2, 4, 8, 9, 13
— Lenormandi, F. Schultz. 2–4, 7–9, 12
— hederaceus, L. 2–4, 6–13
— sceleratus, L. 1–4, 7–9, 11–13
— Flammula, L. 1, 3–5, 7–13
var. pseudo-reptans. 8–10
— Lingua, L. 2–4, 7, 8, 11, 13
— auricomus, L. 1–4, 7–13
— acris, L. 1–5, 7–9, 11, 13
— repens, L. 3–10, 13
— bulbosus, L. 2–4, 7–11, 13
— sardous, Crantz. 4, 7, 10
— parviflorus, L. 2–4, 7, 8, 10, 11
— arvensis, L. 2–4, 7, 8, 9, 11–13
— Ficaria, L. 1–5, 7–13
var. incumbens, F. Schultz. 10
Caltha palustris, L. 1–5, 7–11, 13
var. Guerangerii (Boreau). 9, 10
var. minor, Syme. 10

### Ranunculaceae (*continued*)

Trollius europaeus, L. 2, 3
Helleborus viridis, L. 2, 8, 10–13
— foetidus, L. 2, 3, 8, 10, 11, 13
Eranthis hyemalis, Salisb. 4
Aquilegia vulgaris, L. 1–4, 7–13
Delphinium Ajacis, Reichb. 7, 13
Aconitum Napellus, L. 2, 10, 11

### Berberideae

Berberis vulgaris, L. 2–5, 7–13

### Nymphaeaceae

Nymphaea lutea, L. 2–4, 6–8, 11, 13
— pumila, Hoffm. 2
Castalia speciosa, Salisb. (Nymphaea alba, L.). 2–4, 6–8, 10, 13

### Papaveraceae

Papaver somniferum, L. 5, 8–10, 13
— Rhoeas, L. 1–5, 8–11, 13
— dubium, L. 2, 4, 6–8, 10, 11, 13
var. Lamottei (Bor.). 11
var. Lecoqii (Lamotte). 4
— Argemone, L. 1–4, 7, 8, 10, 11, 13
Meconopsis cambrica, Vig. 4
Chelidonium majus, L. 1–13

### Fumariaceae

Corydalis bulbosa, DC. 4, 8, 11
— lutea, DC. 8, 10, 11
— claviculata, DC. 1–5, 7–9, 11, 13
Fumaria pallidiflora, Jord. 1, 2, 4, 7, 8, 11
— Boraei, Jord. 1, 2, 4, 12
— purpurea, Pugsley
— confusa, Jord. 6, 9, 12
— muralis, Sonder. 4, 9
— densiflora, DC. 4, 10
— officinalis, L. 1–4, 7, 8, 10, 12
[— capreolata. 2–4, 7, 8, 10, 11]

# BOTANY

### Cruciferae

Cheiranthus Cheiri, L. 2, 8, 10, 12, 13
Nasturtium officinale, R.Br. 2, 3, 5, 7–10
var. siifolium (Reichb.) 9, 10
— sylvestre, R. Br. 2, 4, 7–9, 13
— palustre, DC. 2–4, 7–13
— amphibium, R. Br. 4, 8, 12
Barbarea vulgaris, R. Br. 2–13
— stricta, Andrz. 4, 7
— intermedia, Boreau. 9
Arabis hirsuta, Scop. 2–4, 8, 9.
— perfoliata, Lam. 2, 7, 8, 11, 13
Cardamine amara, L. 2, 4, 7, 8, 11–13
— pratensis, L. 2–5, 7–10
— hirsuta, L. 1–4, 7–13
— flexuosa, With. 4, 8–11
— impatiens, L. 3, 8–13
Alyssum calycinum, L. 2, 7
Draba muralis, L. 2
Erophila vulgaris, DC. (= Draba verna, L.). 1–4, 7–11, 13
Cochlearia danica, L. 2, 4
— Armoracia, L. 2, 4, 7, 8, 10, 11, 13
Hesperis matronalis, L. 3–5, 8–11, 13
Sisymbrium Thalianum, J. Gay. 1–4, 7–13
— officinale, Scop. 2, 3, 5, 7–11
var. leiocarpum, DC. 7
— Sophia, L. 2, 4, 8, 10, 11, 13
— Alliaria, Scop. 2, 3, 5, 7–10, 13
Erysimum chieranthoides, L. 2, 8, 10, 11
— perfoliatum, Crantz. 4
Camelina sativa, Crantz. 13
Subularia aquatica, L. 2
Brassica Napus, L. 1, 2, 4, 7, 9, 10
— Rutabaga, DC. 8
— Rapa, L. 10
— (nigra) Sinapioides, Roth. 2, 4, 7–11, 12, 13
— Sinapistrum, Boiss. 2, 4, 5, 7–10, 13
— alba, Boiss. 3, 4, 8–10, 12
Diplotaxis tenuifolia, DC. 4, 10
— muralis, DC. 10, 13
Bursa Bursa-pastoris, Weber. 3–5, 7–10
Coronopus didymus, Sm. 2, 8
— Ruellii, All. 2, 4, 5, 7, 8, 10–13
Lepidium ruderale, L. 2
— sativum, L. 4
— campestre, R. Br. 2, 4–13
— Smithii, Hook. 1–4, 6–11, 13
— Draba, L. 12
Thlaspi arvense, L. 3–5, 7–13
Teesdalea nudicaulis, R. Br. 2–5, 7–11, 13
Hutchinsea petraea, R. Br. 3
Raphanus Raphanistrum, L. 4, 5, 7, 8, 11, 13

### Resedaceae

Reseda alba, L. 12
— lutea, L. 10, 12
— Luteola, L. 1–5, 7–13

### Cistineae

Helianthemum Chamaecistus, Mill. 3, 4, 7–9, 12

### Violarieae

Viola palustris, L. 1–4, 7–9, 12, 13
— odorata, L. 2–5, 7–12
f. alba (Lange). 3, 4, 10, 11, 13
var. imberbis, Leight. 4, 11
× hirta. 12, 13

### Violarieae (*continued*)

Viola hirta, L. 3, 4, 7–10, 13
— silvestris, Reich. 4
— Riviniana, Reich. 4, 7–9, 13
— tricolor, L. 1, 3, 4, 7, 10, 13
— arvensis, Murray. 1, 2, 4, 7–9
— lutea, Huds. 3–6, 8–10, 12
f. var. amoena (Sym.). 3–5, 8

### Polygaleae

Polygala vulgaris, L. 1–4, 6–13
— oxyptera, Reichb. 9
— serpyllacea, Weihe. 4, 6, 8, 12, 13

### Caryophylleae

Dianthus Armeria, L. 10–12
— deltoides, L. 4, 6–13
— plumarius, L. 7, 9, 10
Saponaria officinalis, L. 3, 4, 7–10, 12, 13
Silene Cucubalus, Wibel. 1–11, 13
var. puberula, Syme. 3, 4
— nutans, L. 7
— noctiflora, L. 2, 4
Lychnis alba, Mill. 1–5, 7–11
— dioica, L. 1, 3–5, 7–11
— Flos-cuculi, L. 1, 3–12
— Githago, Scop. 1, 2, 4, 7–11, 13
Cerastium quaternellum, Fenzl. 3, 4, 7–9, 11, 12
— semidecandrum, L. 4, 13
— glomeratum, Thuill. 2, 4, 7–10, 13
— triviale, Link. 7–10
— arvense, L. 9
Stellaria aquatica, Scop. 2, 4, 7–13
— nemorum, L. 3–5, 10, 11
— media, Cyr. 2–5, 7–10
var. Boraeana (Jord.). 4, 7, 10, 12
var. major, Koch. 10
— umbrosa, Opiz. 4, 8, 13
— Holostea, L. 1–5, 7–10, 13
— palustris, Retz. 2, 4, 7, 10, 11
— graminea, L. 3–5, 7–9
— uliginosa, Murr. 3, 4, 7–10, 13
Arenaria tenuifolia, L. 4
— trinervia, L. 1–4, 7–13
— serpyllifolia, L. 2–4, 6–11, 13
var. leptoclados (Guss.). 8
Sagina apetala, L. 8, 10, 13
— ciliata, Fr. 12
— procumbens, L. 3, 4, 7–11
— nodosa, Fenzl. 2, 3, 7, 8, 11
Spergula arvensis, L.
var. (*a*) vulgaris (Boenn.). 2–4, 7–9, 11, 13
var. (*b*) sativa (Boenn.). 2, 7
Buda rubra, Dum. 2, 4, 7–9, 13
— marina, Dum.
var. neglecta (Kindb.). 4

### Portulaceae

Claytonia sibirica, L. 10
— perfoliata, Donn. 7, 13
Montia fontana, L. 2–4, 6–11
var. repens, Pers. 8
var. erecta, Pers. 4, 8, 9

### Elatineae

Elatine hexandra, DC. 2, 4

HYPERICINEAE

Hypericum Androsaemum, L. 1–4, 7–10, 12, 13
— perforatum, L. 1, 3–5, 7, 8, 10, 12
var. angustifolium, Gaud. 8, 12, 13
— dubium, Leers. 2–13
var. maculatum, Bab. 8, 9
— quadratum, Stokes. 2–5, 7–11, 13
— humifusum, L. 1–9, 11–13
— pulchrum, L. 1–9, 11–13
— hirsutum, L. 2–4, 6–13
— montanum, L. 3, 9, 10, 12, 13
— elodes, Huds. 2–4, 7–11

MALVACEAE

Althaea officinalis, L. 9, 10
Lavatera sylvestris, Brot. 2
Malva moschata, L. 1–13
— sylvestris, L. 1–9, 13
— rotundifolia, L. 1–4, 6–13

TILIACEAE

Tilia platyphyllos, Scop. 8
— vulgaris, Hayne. 8–10, 12, 13
— cordata, Mill. 2, 3, 6, 7, 10

LINEAE

Radiola linoides, Roth. 7, 9–11, 13
Linum catharticum, L. 1–10, 12
— perenne, L. 4, 6, 9, 13
— angustifolium, Huds. 9
— usitatissimum, L. 4, 8, 13

GERANIACEAE

Geranium sanguineum, L. 3, 10, 12
— phaeum, L. 1, 4, 7, 9, 10, 12, 13
— sylvaticum, L. 6, 10, 12, 13
— pratense, L. 2, 5, 7, 9, 10, 12, 13
— pyrenaicum, Burm. fil. 1–4, 8, 10–13
— molle, L. 1, 2, 4, 5, 7–9, 11, 13
— pusillum, L. 4, 5, 7, 8, 10–13
— rotundifolium, L. 2, 4
— dissectum, L. 2, 3, 5–9, 11
— columbinum, L. 2–4, 6–9, 10–13
— lucidum, L. 2–5, 8–13
— Robertianum, L. 1–5, 7–10
Erodium cicutarium, L'Hérit. 2–4, 7–9, 10, 11, 13
— moschatum, L'Hérit. 2, 4, 11
— maritimum, L'Hérit. 9, 13
Oxalis Acetosella, L. 1–4, 7–10, 13
var. sub-purpurascens, DC. 1–4, 8
— corniculata, L. 2, 9
Impatiens Noli-tangere, L. 2, 5, 8
— parviflora, DC. 5, 12, 13

ILICINEAE

Ilex Aquifolium, L. 1, 3–5, 7–13

CELASTRINEAE

Euonymus europaeus, L. 2–5, 7–13

RHAMNEAE

Rhamnus catharticus, L. 2–5, 7–9, 11–13
— Frangula, L. 1–4, 7, 8, 11–13

SAPINDACEAE

Acer Pseudo-platanus, L. 3, 6, 8–10
— campestre, L. 2, 5, 8–10, 12, 13

LEGUMINOSAE

Genista anglica, L. 1, 2, 4–13
— tinctoria, L. 1–13
Ulex europaeus, L. 1–5, 7–9, 11
— Gallii, Planch. 2, 4, 7–10, 12, 13
— nanus, Forster. 4 (?)
Cytisus scoparius, Link. 2–5, 7–10, 12
Ononis arvensis, L. 1–4, 7–10, 12, 13
var. inermis, Lange. 2, or 4
— spinosa, L. 2, 4, 7, 8, 10–13
Medicago sativa, L. 4, 8
— lupulina, L. 4, 7–10, 12, 13
— arabica, Huds. (maculata). 11
Melilotus officinalis, Lam. 4, 7–13
— alba, Desr. 2, 4
— arvensis, Wallr. 4, 7, 8, 11, 13
Trifolium pratense, L. 1, 2, 5, 7–10
var. sativum, Schreb. 8
— medium, L. 4, 6–11, 13
— incarnatum, L. 3, 4, 8, 9
— arvense, L. 1–4, 7–11, 13
— striatum, L. 2–5, 7, 8, 11
var. erectum, Leight. 4, 8, 9
— hybridum, L. 4, 6, 8, 9, 11–13
— repens, L. 1–3, 7–10
— fragiferum, L. 8, 12
— agrarium, L. 1, 2, 8
— procumbens, L. 1–3, 7–10, 12
— dubium, Sibth. 1, 3–5, 7–10, 13
— filiforme, L. 7
Anthyllis Vulneraria, L. 2–4, 8, 10, 12
var. coccinea, L. 4
Lotus corniculatus, L. 1–5, 7–10
— tenuis, Waldst. and Kit. 2
— uliginosus, Schkuhr. 1, 2, 4, 5, 7–9, 11, 13
var. glabriusculus, Bab. 2, 4, 13
Astragalus glycyphyllos, L. 2, 4, 12
Ornithopus perpusillus, L. 1–4, 7–13
Hippocrepis comosa, L. 2
Onobrychis viciaefolia, Scop. 3, 8–10
Vicia hirsuta, Gray. 2–5, 8–10
— gemella, Crantz. 2, 4, 7–13
— Cracca, L. 1–4, 7–9, 11, 13
— Orobus, DC. 9
— sylvatica, L. 2, 4, 8–13
— sepium, L. 2–10, 13
— sativa, L. 2, 7–10, 12
— angustifolia, L. 1–11, 13
var. Bobartii, Koch. 3, 4, 7
— lathyroides, L. 9
Coronilla varia, L. 12
Lathyrus Nissolia, L.
— pratensis, L. 1–10, 12, 13
— latifolius, L. 2, 10
— sylvestris, L. 4, 7, 8, 10, 13
— montanus, Bernh. 1, 2, 4, 7–13
var. tenuifolius, Reich. fil. 4, 9, 10

ROSACEAE

Prunus spinosa, L. 2–5, 8–10
— insititia, Huds. 2, 4, 7–9, 11, 13
— domestica, L. 2, 4, 8, 10, 12
— avium, L. 1–4, 7–13
— Cerasus, L. 1, 3
— Padus, L. 1–3, 6–9, 11, 12
Spiraea salicifolia, L. 2, 3, 5, 7, 8, 12

ROSACEAE (*continued*)

Spiraea Ulmaria, L. 1, 4, 5, 7–12
— Filipendula, L. 8
Rubus idaeus, L. 1–13
var. asperrimus, Lees. 2
— fissus, Lindl. 2, 7, 11, 13
— suberectus, Anders. 2, 7
— Rogersii, Linton. 2
— plicatus, Wh. and N. 2–4, 7
— carpinifolius, Wh. and N. 2, 4, 6–9, 11
— incurvatus, Bab. 8
— Lindleianus, Lees. 2, 4, 7–9, 11, 13
— argenteus, Wh. and N. 2, 8, 11, 13
— rhamnifolius, Wh. and N. 2, 4, 7–9, 12, 13
— pulcherrimus, Neum. 2, 4, 7–13
— Lindebergii, P. J. Muell. 4, 8, 9
— villicaulis, Koehl. 2
subsp. Selmeri (Lindeb). 4, 7, 8, 11, 13
var. insularis Aresch. 6
subsp. calvatus, Blox. 2, 4, 8, 9
— gratus, Focke. 2
— Godroni, Lec. and Lam. (= argentatus, P. J. M.), 4
var. clivicola. 8
— rusticanus, Merc. 2, 4, 7–9, 13
— silvaticus, Wh. and N. 7–9
— lentiginosus, Lees. 7
— macrophyllus, Wh. and N. 2, 7, 10
f. umbrosa 7, 8
subsp. Schlechtendalii (Weihe). 2, 4, 8, 9, 12, 13
— Sprengelii, Weihe. 11, 13
— hirtifolius, Muell. and Wirtg. 10
— pyramidalis, Kalt. 2, 4, 8, 10
var. eglandulosa. 4
— leucostachys, Schleich. 4, 6–9, 11–13
— lasioclados, Focke. 9
var. angustifolius, Rogers. 6
— mucronatus, Blox. 2, 4, 7, 8
— anglosaxonicus, Gelert. 4, 6, 11
subsp. raduloides, Rogers. 4, 8, 9, 13
var. setulosus, Rogers. 8
— infestus, Weihe. 4, 7, 8, 11
var. virgultorum, A. Ley. 4, 6, 8, 9, 13
— Borreri, Bell Salt. 8
— Leyanus, Rogers. 9
— Drejeri, G. Jensen. 8
— radula, Weihe (type). 2, 7, 8
subsp. anglicanus, Rogers. 2, 7
subsp. echinatoides, Rogers. 4, 8
— echinatus, Lindl. 2, 4, 7–11, 13
— rudis, Wh. and N. 8
— oigocladus, Muell. and Lefv. 13
var. Newbouldii (Bab.). 2, 7, 11, 13
— podophyllus, P. J. Muell. 4, 8
— Bloxamii, Lees. 2
— fuscus, Wh. and N. 9, 10, 13
— pallidus, Wh. and N. 8, 12, 13
— cinerosus, Rogers. 9
— scaber, Wh. and N. 2
— foliosus, Wh. and N. 9, 10, 13
— rosaceus, Wh. and N. (Typical or nearly so.)
var. hystrix (Wh. and N.). 2, 8, 9, 13
subsp. infecundus, Rogers. 2, 12
var. adornatus, P. J. M. 9
— Koehleri, Wh. and N. (Typical or nearly so.) 6
subsp. dasyphyllus, Rogers. 2, 4, 6–9, 11, 12
— viridis, Kalt. 11

ROSACEAE (*continued*)

Rubus Bellardii, Wh. and N. 12, 13
var. dentatus. 13
— hirtus, W. and K. 13
— dumetorum, Wh. and N., sp. coll. 8
var. ferox, Weihe. 4, 7, 8.
var. diversifolius (Lindl.). 2, 4, 6–9, 11, 13
var. tuberculatus, Bab. 4, 13
— corylifolius, Sm. (sp. collect. incl. vars.). 6
var. sublustris (Lees). 2, 7–9, 11, 13
var. cyclophyllus, Lindeb. 2, 4
— Balfourianus, Blox. 7
— caesius, L. 2–4, 8, 13
— saxatilis, L. 2, 3, 12
— Chamaemorus, see Lt. *Fl.* 528, and Whitwell MSS. in Osw. Flora—error
— laciniatus (form). 8
— rusticanus × rhamnifolius. 8
— rusticanus × leucostachys. 8
— leucostachys × dumetorum. 8
— pulcherrimus × Selmeri. 8
Geum urbanum, L. 2–5, 7–10
— rivale, L. 2–4, 6–13
— intermedium, Ehrh. 2, 6, 8
Fragaria vesca, L. 2–5, 7–11
— elatior, Ehrh. 1, 9
Potentilla Fragariastrum, Ehrh. 1–4, 7–13
— verna, L. 8–10
— Tormentilla, Scop. 1–3, 7–10
— procumbens, Sibth. 5, 8, 10, 12
× mixta, Nolte. 8
— reptans, L. 1, 3–5, 7–10, 12
— Anserina, L. 1–5, 7–11, 13
— argentea, L. 4, 5, 7, 8, 11, 13
— palustre, L. 2–4, 6–11, 13
Alchemilla arvensis, Scop. 1, 4, 7–10, 12
— vulgaris, L. 1–4, 6–13
Agrimonia Eupatoria, L. 1, 4–9, 11, 12
— odorata, Mill. 8, 12
Poterium Sanquisorba, L. 2, 3, 5, 8–10, 12, 13
— officinalis, Hook, fil. 4, 9, 11, 13
Rosa spinosissima, L. 7, 8, 10
— mollis, Sm. 2, 4, 6, 7, 9, 10, 12
— tomentosa, Sm. 3, 6, 8, 9, 12, 13
var. subglobosa (Sm.). 8, 12, 13
var. farinosa, Seringe. 8
var. scabriuscula (Sm.). 6
— rubiginosa, L. 5, 8, 10, 13
— micrantha, Sm. 8
— obtusifolia, Desv. 8
— canina, L. (agg.). 3
var. lutetiana (Leman). 4, 6, 8, 13
var. dumalis (Bechst.). 4, 6, 8, 12, 13
var. urbica (Leman). 4, 8, 9, 13
— arvensis, Huds. 4, 6, 8, 11
— glauca, Vill. 8
var. coriifolia (Fr.). 8
Pyrus torminalis, Ehrh. 2, 3, 7, 8, 12, 13
— Aria, Ehrh. 2–4, 7–9
— domestica, Ehrh. 12
— Aucuparia, Ehrh. 1–4, 7–13
— communis, L. 8
— Malus, L. 2–6, 8, 10, 12, 13
var. acerba, DC. 8
var. mitis, Wallr. 6, 8, 9, 11
Crataegus Oxyacantha, L. 3–5, 8–13
var. oxyacanthoides (Thuill.). 3, 8

SAXIFRAGEAE

Saxifraga tridactylites, L. 2–4, 7–10, 12, 13
— granulata, L. 2, 4, 7–13
— hypnoides, L. 8, 10
Chrysosplenium oppositifolium, L. 1–4, 7–13
— alternifolium, L. 1–5, 7–13
Parnassia palustris, L. 2–4, 7, 8, 10–13
Ribes Grossularia, L. 2, 4, 7–13
— alpinum, L. 9
— rubrum, L. 2, 4, 6–11, 13
— nigrum, L. 2–4, 7, 9, 10, 13

CRASSULACEAE

Cotyledon Umbilicus, L. 2–5, 7–13
Sedum Telephium, L. 3–13
var. purpurascens, Koch. 4, 7
— album, L. 9, 10
var. teretifolium (Haw.). 10
— dasyphyllium, L. 8–12
— anglicum, Huds. 3, 4, 7, 12
— acre, L. 1–5, 7–11
— reflexum, L. 2–5, 7–10, 12, 13
— rupestre, L. 6, 8–10, 12
var. minus, Syme. 8, 9
— Forsterianum, Sm. 3, 4, 7–9
Sempervivum tectorum, L. 4, 8, 10

DROSERACEAE

Drosera rotundifolia, L. 1, 2, 4, 7–13
— anglica, Huds. 1, 2, 7
— intermedia, Hayne. 1, 2, 4, 7, 11

HALORAGEAE

Hippuris vulgaris, L. 5, 8, 9, 11–13
Myriophyllum verticillatum, L. 2, 8, 10, 11
var. pectinatum [DC.). 13
— spicatum, L. 2–4, 7–9, 11–13
— alternifolium, DC. 2–4, 7, 8
Callitriche verna, L. 7, 9, 12
— stagnalis, Scop. 4, 6, 7, 9, 11–13
— hamulata, Kuetz. 7, 13
var. sessilis, Bab. 4, 8
— obtusangula, Le Gall. 2

LYTHRARIEAE

Peplis Portula, L. 2, 4, 7, 8, 10–13
Lythrum Salicaria, L. 2–5, 7–9, 11, 13

ONAGRARIEAE

Epilobium angustifolium, L. 1–7, 9–13
var. brachycarpum, Lt. 7
— hirsutum, L. 1–12
— parviflorum, Schreb. 2–4, 7–11, 13
— montanum, L. 1, 4, 8, 10
— roseum, Schreb. 4, 8, 12
— obscurum, Schreb. 2, 4, 7–11, 13
— palustre, L. 2–5, 7–13
Oenothera biennis, L. 7, 8, 12, 13
Circaea lutetiana, L. 1–5, 8–13

CUCURBITACEAE

Bryonia dioica, Jacq. 1–4, 7–10, 12, 13

UMBELLIFERAE

Hydrocotyle vulgaris, L. 3, 4, 7–11
Astrantia major, L. 9
Sanicula europaea, L. 1–4, 7–12

UMBELLIFERAE (*continued*)

Conium maculatum, L. 2, 4, 6–13
Smyrnium Olusatrum, L. 2, 10, 12
Apium graveolens, L. 6
— nodiflorum, Reichb. fil. 2–4, 6–9, 11, 13
— inundatum, Reichb. fil. 2–4, 7, 8, 11, 12
Cicuta virosa, L. 2–4, 7, 8, 11, 13
Carum Petroselinum, Benth. and Hook. 4, 10–12
Sison Amomum, L. 1, 4, 5, 10, 12, 13
Sium latifolium, L. 7–9, 11
— erectum, Huds. 2, 3, 7–9, 11–13
Aegopodium Podagraria, L. 1–4, 7, 13
Pimpinella Saxifraga, L. 2–4, 6–9, 12
var. dissecta, With. 8, 13
— major, Huds. 4, 7, 9, 10, 13
Conopodium denudatum, Koch. 2–4, 7–10, 13
Myrrhis Odorata, Scop. 1, 3, 4, 8–10, 12, 13
Chaerophyllum temulum, L. 2, 6, 8–10, 12
Scandix Pecten-veneris, L. 2–4, 8
Anthriscus vulgaris, Bernh. 2, 4, 7, 8, 11, 12
— sylvestris, Hoffm. 2, 4, 5, 8–10
— Cerefolium, Hoffm. 10, 12, 13
Foeniculum vulgare, Mill. 3, 13
Oenanthe fistulosa, L. 2–4, 7–13
— crocata, L. 2–4, 6–13
— Phellandrium, Lam. 2, 4, 5, 7, 8, 11, 12
Aethusa Cynapium, L. 2–5, 7–9
Silaus flavescens, Bernh. 2, 4, 7–12
Angelica sylvestris, L. 1, 2, 4, 5, 7–10, 12, 13
Peucedanum sativum, Benth. and Hook. f. 3, 7, 8, 10, 11
Heracleum Sphondylium, L. 1–5, 7–13
var. angustifolium, Huds. 2–4, 8, 9, 11–13
Daucus Carota, L. 2–4, 6–8, 10
Caucalis arvensis, Huds. 7, 8
— Anthriscus, Huds. 2, 7–10, 13
— nodosa, Scop. 2–4, 7–10

ARALIACEAE

Hedera Helix, L. 2, 4, 5, 7–10

CORNACEAE

Cornus sanguinea, L. 2–5, 7–13

CAPRIFOLIACEAE

Adoxa Moschatellina, L. 2–4, 7–13
Sambucus nigra, L. 1–5, 7–11
var. laciniata, L. 11
— Ebulus, L. 2, 3, 5, 7, 8, 10, 12, 13
Viburnum Opulus, L. 2–5, 7–13
— Lantana, L. 9
Lonicera Caprifolium, L. 9
— Periclymenum, L. 1–5, 8–11
— Xylosteum, L. 2, 9, 10, 13

RUBIACEAE

Galium Cruciata, Scop. 1, 3–5, 7–13
— verum, L. 1–5, 7–10
— erectum, Huds. 4
— Mollugo, L. 2, 4, 8, 9, 12, 13
var. elatum (Thuill.). 12, 13
var Bakeri, Syme. 13
— saxatile, L. 1–4, 7–13
— sylvestre, Poll. 10
— palustre, L. 3, 4, 8, 10
var. Witheringii (Sm.). 2, 4, 6, 8, 9, 12, 13
— uliginosum, L. 2, 3, 8, 9

# BOTANY

### Rubiaceae (*continued*)

Galium Aparine, L. 1, 3–5, 7–11
— tricorne, Stokes. 9
Asperula odorata, L. 1–5, 7–13
— cynanchica, L. 9
Sherardia arvensis, L. 3, 4, 7–10

### Valerianeae

Valeriana dioica, L. 1–5, 7–13
— sambucifolia, Willd. 1–4, 6–13
— pyrenaica, L. 8
Centranthus ruber, DC. 10
Valerianella olitoria, Poll. 2, 4, 7–12
— eriocarpa, Desvr. 4
— carinata, Loisel. 4, 6, 8, 9
— dentata, Poll. 2–4, 7–9, 12, 13

### Dipsaceae

Dipsacus sylvestris, Huds. 2–5, 7–13
— pilosus, L. 2–5, 7, 8, 10–13
— Fullonum, W. 4, 9
Scabiosa Succisa, L. 2–5, 7–13
— Columbaria, L. 3, 4, 8–10, 12, 13
— arvensis, L. 1, 3–11, 13

### Compositae

Eupatorium cannabinum, L. 3–5, 7–10, 12, 13
Solidago Virgaurea, L. 2–4, 7–13
Bellis perennis, L. 1–4, 7–11
Erigeron acre, L. 2, 3, 8, 10–13
Filago germanica, L. 2–4, 6–12
— minima, Fr. 2–4, 7–9, 11–13
Antennaria dioica, R. Br. 6
Anaphalis margaritacea, Benth. and Hook. fil. 11, 12
Gnaphalium uliginosum, L. 2, 7–10, 13
— luteo-album, L. 12
— sylvaticum, L. (rectum, Sm.). 6–13
Inula Helenium, L. 1–6, 8–10, 12, 13
— Conyza, DC. 1–6, 8–13
Pulicaria dysenterica, Gaertn. 2–13
Bidens cernua, L. 2–4, 7–13
— tripartita, L. 1, 2, 4, 7–9, 11, 13
Achillea Millefolium, L. 1–5, 8, 9, 11, 13
— Ptarmica, L. 1–5, 7–13
Anthemis tinctoria, L. 4.
— Cotula, L. 7–12
— arvensis, L. 2, 6, 7, 9
— nobilis, L. 4, 6, 8, 12, 13
Chrysanthemum segetum, L. 2, 4, 7–9, 11, 13
— Leucanthemum, L. 1–3, 5, 7–10
— Parthenium, Pers. 2, 4, 7–12
Matricaria inodora, L. 2, 3, 7–10, 13
— Chamomilla, L. 3, 5, 7–11
Tanacetum vulgare, L. 2–4, 7–13
Artemisia Absinthium, L. 2–4, 7–12
— vulgaris, L. 2, 4, 8, 9, 11–13
Tussilago Farfara, L. 2–4, 8–10, 12, 13
Petasites fragrans, Presl. 2
— vulgaris, Desf. 1–4, 7–13
var. hybrida, Lt. *Fl.* 3
Doronicum Pardalianches, L. 8–10, 12, 13
Senecio vulgaris, L. 2–5, 7–10
— sylvaticus, L. 1, 3, 4, 6–9, 11, 13
var. auriculatus. 4
— viscosus, L. 12

### Compositae (*continued*)

Senecio squalidus, L. 6, 12
— erucifolius, L. 1–5, 7, 8, 12, 13
— Jacobaea, L. 1–5, 8–10
— aquaticus, Huds. 2–5, 7–13
— sarracenicus, L. 5, 12
Carlina vulgaris, L. 3, 4, 7–13
Arctium majus, Bernh. 2, 7, 9, 12, 13
— nemorosum, Lej. 4
— minus, Bernh. 1, 2, 4, 8, 9, 13
— intermedium, Lange. 4, 8, 9
Carduus tenuiflorus, Curt. 7–9
— nutans, L. 2, 4, 7–13
— crispus, L. 2, 4, 6–9, 12
— 'litigiosus.' 12
— lanceolatus, L. 3, 7–9
— eriophorus, L. 4, 6, 8–10, 12, 13
— palustris, L. 3, 7, 8
— pratensis, Huds. 1, 2, 7
— acaulis, L. 8, 12
— arvensis, Robson. 2, 7–9
Onopordon Acanthium, L. 2, 8, 11
Mariana lactea, Hill. 7, 8
Serratula tinctoria, L. 7, 9–13
Centaurea nigra, L. 2, 4, 5, 8–12
var. radiata, Lt. *Fl.* 7
— Scabiosa, L. 2, 8–13
— Cyanus, L. 2–4, 7–9
— Calcitrapa, L. 8
— solstitialis, L. 12
Cichorium Intybus, L. 2, 4, 8, 9, 12
Lapsana communis, L. 2, 3, 5, 7–11
Picris hieracioides, L. 2, 4, 6–13
var. arvalis (Jord.). 3
— echioides, L. 8–10
Crepis taraxacifolia, Thuill. 4, 8, 13
— virens, L. 2, 4, 6–10
— setosa, Hall, fil. 11
— biennis, L. 3, 4, 7
— paludosa, Moench. 2, 3, 7, 11
Hieracium Pilosella, L. 1, 3, 4, 6–11
— aurantiacum, L. 6, 8, 10
— lasiophyllum, Koch. 4
— caesium, Fr. 7
— murorum, L. 4–6, 8–10, 13
var. pellucidum, Laestad. 4
var. lepistodes, Johanss. 8
— vulgatum, Fr. 4, 6, 10–13
var. nemorosum, 13
— diaphanoides, Lindeb. 8
— sciaphilum, Uechtritez. 6, 8, 11–13
— rigidum, Hartm. 13
var. tridentatum (Fr.). 9
— boreale, Fr. 1–4, 6–13
— umbellatum, L. 2, 4, 7, 8, 11–13
Hypochaeris glabra, L. 2, 3, 7, 8, 11, 13
var. Balbisii, Loisel. 4
— radicata, L. 2–4, 7–11, 13
— maculata, L. 9
Leontodon hirtus, L. 4, 6–10, 12, 13
— hispidus, L. 2, 3, 6–10, 12, 13
— autumnalis, L. 2–4, 7–10
Taraxacum officinale, Web. 2–5, 7, 8, 10, 11
var. erythrospermum (Andrez.). 2, 7, 8, 13
var. udum (Jord.). 4, 13
Lactuca virosa, L. 10
— Scariola, L. 8
— muralis, Fresen. 1–13

COMPOSITAE (*continued*)

Lactuca alpina, Benth. 4. (This occurred in 1900 as a casual)
Sonchus oleraceus, L. 3–8, 10
— asper, Hoffm. 4–6, 8–10, 13
— arvensis, L. 2–5, 7–12
Tragopogon pratense, L. 8, 10. [? 2–4, 7, 8, 11, 12]
var. minus, Mill. 1–13

CAMPANULACEAE

Lobelia Dortmanna, L. 2, 4, 8, 9
Jasione montana, L. 1, 2, 4–11, 13
Wahlenbergia hederacea, Reichb. 10, 12
Campanula glomerata, L. 8–10
— Trachelium, L. 2–4, 6–13
— latifolia, L. 2, 8, 10, 12, 13
— rapunculoides, L. 4, 10
— rotundifolia, L. 1–5, 7–10
— Rapunculus, L. 11
— patula, L. 2, 4, 6–11, 13
Specularia hybrida, A. DC. 8, 9, 12

VACCINIACEAE

Vaccinium Vitis-idaea, L. 1, 4, 9
— Myrtillus, L. 1–5, 7–13
— Oxycoccus, L. 1–4, 7–9, 11, 13

ERICACEAE

Andromeda Polifolia, L. 1, 2, 7, 11
Calluna vulgaris, Hull. 1–3, 5–12
var. hirsuta, Leight. 4, 9, 11
Erica Tetralix, L. 1–5, 7–9, 11
— cinerea, L. 1, 3, 7–9, 11
Pyrola rotundifolia, L. 9
— media, Sw. 9
— minor, L. 9, 10

MONOTROPEAE

Hypopitys Monotropa, Crantz. 9, 13

PRIMULACEAE

Hottonia palustris, L. 1–4, 7, 8, 11
Primula acaulis, L. 2–5, 8–10
× veris (as P. elatior). 2–4, 7–9
— veris, L. 1–4, 6, 8–13
Lysimachia vulgaris, L. 2, 4, 8, 9, 11–13
— Nummularia, L. 2–4, 6–10, 12, 13
— nemorum, L. 1–5, 8–10
Anagallis arvensis, L. 1, 3–10, 12
— caerulea, Schreb. 2, 4, 7, 8, 10, 11
— tenella, L. 2–4, 7–13
Centunculus minimus, L. 12
Samolus Valerandi, L. 2, 3

OLEACEAE

Fraxinus excelsior, L. 3, 5, 8–11
Ligustrum vulgare, L. 2, 5, 7–9, 11–13

APOCYNACEAE

Vinca major, L. 4, 7, 8, 10, 11, 13
— minor, L. 1, 2, 4, 8, 10, 13

GENTIANEAE

Blackstonia perfoliata, Huds. 2, 4–13
Erythraea Centaurium, Pers. 1–5, 7–13
Gentiana Amarella, L. 3, 8–13

GENTIANEAE (*continued*)

Gentiana campestris, L. 1, 3, 4, 8, 12, 13
Menyanthes trifoliata, L. 2–4, 7–13
Limnanthemum peltatum, S. P. Gmel. 7, 11

POLEMONIACEAE

Polemonium caeruleum, L. 4, 7, 8, 10, 12, 13

BORAGINEAE

Cynoglossum officinale, L. 1–4, 7–10, 12
— germanicum, Jacq. 10
Asperugo procumbens, L. 10
Symphytum officinale, L. 2–13
var. patens, Sibth. 4
* peregrinum, Ledeb. 13
Borago officinalis, L. 3, 8–11
Anchusa officinalis, L. 9
— sempervirens, L. 2, 3, 10, 12
Lycopsis arvensis, L. 3–5, 7–13
Pulmonaria officinalis, L. 8, 10, 13
Myosotis caespitosa, F. Schultz. 2, 4, 8, 9, 13
— palustris, Relh. 1–3, 7–9, 11, 13
var. strigulosa, Mert. and Koch. 8–10, 12, 13
— repens, G. Don. 4, 6, 8–10, 13
— sylvatica, Hoffm. 1, 7–9, 12
— arvensis, L. 3, 5–10, 13
var. umbrosa, Bab. 2, 4, 6–10, 13
— collina, Hoffm. 2, 3, 7–12
— versicolor, Reichb. 2–4, 6–9, 11, 13
Lithospermum officinale, L. 2–4, 7–10, 12, 13
— arvense, L. 2–4, 7–11, 13
Echium vulgare, L. 1–9, 11–13

CONVOLVULACEAE

Volvulus sepium, Medic. 2–4, 7–13
Convolvulus arvensis, L. 1, 3, 5, 8, 9, 11, 12
Cuscuta epilinum, Weihe. 2, 7, 11
— Epithymum, Murr. 2, 11
— Trifolii, Bab. 8

SOLANACEAE

Solanun Dulcamara, L. 3–5, 7–9, 12, 13
— nigrum, L. 2, 4, 8, 11
Lycium chinense, Mill. 4, 8
Atropa Belladonna, L. 3, 5, 7–9, 11, 12
Datura Stramonium, L. 2, 4, 7, 10
Hyoscyamus niger, L. 2–4, 6–8, 10–12

SCROPHULARINAE

Verbascum Thapsus, L. 1–13
— Lychnitis, L. 10–12
— nigrum, L. 7, 8, 11
— virgatum, Stokes. 1–3, 7–10
— Blattaria, L. 1, 4, 7–9, 11, 13
Linaria Cymbalaria, Mill. 2–4, 6–13
— Elatina, Mill. 2–4, 7–10
— repens Mill. × vulgaris. 10
— vulgaris, Mill. 1, 2, 4–6, 8, 10, 12
— viscida, Moench. 2, 8–10, 12
Antirrhinum majus, L. 2–4, 7, 10
— Orontium, L. 9, 10
Scrophularia aquatica. 1–5, 7–13
var. cinerea, Dum. 4
— umbrosa, Dum. 8, 10, 13
— nodosa, L. 1, 2, 4–11
— vernalis, L. 3

# BOTANY

### Scrophularinae (*continued*)

Mimulus Langsdorfii, Donn. 2, 6–12
Limosella aquatica, L. 4, 11
Digitalis purpurea, L. 1, 3–11, 13
Veronica hederifolia, L. 2, 3, 7–13
— polita, Fr. 2–4, 8, 9, 12, 13
— agrestis, L. 3, 4, 7, 8, 10
— Buxbaumii, Ten. 2–4, 6–11, 13
— arvensis, L. 2–4, 7–9
— serpyllifolia, L. 2–5, 7–9
— officinalis, L. 3–5, 7–9, 12, 13
— Chamaedrys, L. 1–5, 7–10
— montana, L. 2–4, 8–13
— scutellata, L. 2–4, 6–13
var. hirsuta, Weber. 12
— Anagallis, L. 2–4, 7–13
— Beccabunga, L. 1–5, 6–10
Euphrasia officinalis, L. 3, 5, 6, 8–10
— Rostkoviana, Hayne. 9
— gracilis, Fries. 1
— nemorosa, H. Mart. 3, 8, 9, 12
— curta, Fr. 12
var. glabrescens, Wettst. 8
Bartsia Odontites, Huds. 1, 3, 5–11
var. verna (Reichb.). 1, 3
var. serotina (Reichb.). 4, 8, 12
Pedicularis palustris, L. 2–5, 7–13
— sylvatica, L. 2–5, 7–11
Rhinanthus Crista-Galli, L. 1, 3–5, 7–10, 13
Melampyrum pratense, L. 3–9, 11, 12
? — sylvaticum, L. 4, 6, 8, 9

### Orobanchaceae

Orobanche major, L. 3, 4, 6, 8, 9, 11, 13
— elatior, Sutton. 9, 11, 12
— minor, Sm. 8, 12
Lathraea Squamaria, L. 3, 4, 6–10, 12, 13

### Lentibularieae

Utricularia vulgaris, L. 1–4, 7–8, 11
— minor, L. 1–4, 7
Pinguicula vulgaris, L. 2–4, 7–13

### Verbenaceae

Verbena officinalis, L. 2–5, 7, 8, 10, 13

### Labiatae

Mentha rotundifolia, Huds. 2, 6–10, 12
— alopecuroides, Hull. Salop.
— longifolia, Huds. 2, 9, 11, 12
— viridis, L. 8, 12, 13
— piperita, L. 4, 5, 7, 8, 10, 13
var. officinalis (Hull.). 7
var. vulgaris (Sole). 4, 13
— hirsuta, Huds. 2–5, 7–11
— sativa, L. 8, 9, 11
var. paludosa (Sole). 12
var. subglabra, Baker. 2, 8
— rubra, Sm. 4, 8, 11–13
— gentilis, L. 8, 10, 11, 13
— arvensis, L. 8, 9, 11, 12
var. nummularia (Schreb.). 2
— Pulegium, L. 3, 7, 8
Lycopus europaeus, L. 2–5, 7–13
Origanum vulgare, L. 1, 3–5, 8–10, 12, 13
Thymus Serpyllum, Fr. 3–5, 7–11, 13
— Chamaedrys, Fr. 9, 10

### Labiatae (*continued*)

Calamintha Clinopodium, Spenn. 1–5, 8–13
— Acinos, Clairv. 1, 2, 8–13
— officinalis, Moench. 3, 4, 7–10, 12, 13
Melissa officinalis, L. 4
Salvia Verbenaca, L. 4, 8, 12
— pratensis, L. 4, 9 (?)
Nepeta Cataria, L. 2–4, 7–13
— Glechoma, Benth. 1–5, 7–10, 13
Scutellaria galericulata, L. 2–5, 7–11, 13
— minor, Huds. 2, 4, 5, 7-10, 12, 13
Prunella vulgaris, L. 1, 4, 5, 7–10
Marrubium vulgare, L. 2, 3, 5, 7, 8, 10–13
Stachys Betonica, Benth. 2, 4–13
— palustris, L. 1–4, 7–11
× sylvatica (ambigua Sm.). 2, 4, 7, 9, 1
— sylvatica, L. 1, 2, 4, 5, 7–10
— arvensis, L. 2, 4, 7, 8
— annua, L. 8
Galeopsis Ladanum, L. agg. 1, 3, 4, 6, 8–10, 13
— speciosa, Mill. 1–4, 6–11, 13
— Tetrahit, L. 1–4, 6–11
var. bifida (Boenn.). 7–9
Leonurus Cardiaca, L. 3, 12, 13
Lamium amplexicaule, L. 2–4, 6–9, 11, 13
— purpureum, L. 1–3, 5, 7–11, 13
var. decipiens, Sonder. 10
— maculatum, L. 2, 7, 11
— album, L. 1–5, 8–13
— Galeobdolon, Crantz. 1–5, 7–13
Ballota nigra, L. 3, 4, 6–11, 13
var. foetida, Koch. 4
var. ruderalis, Koch. 4
var. alba, L. 7, 8, 10, 11, 13
Teucrium Chamaedrys, L. 2, 8, 12
— Scorodonia, L. 1, 2, 4, 5, 7–9
Ajuga reptans, L. 1, 3–11

### Plantagineae

Plantago major L. 1, 4, 5, 7–10, 13
var. intermedia (Gilib.). 6, 12, 13
— media, L. 2, 8–10, 12, 13
— lanceolata, L. 2, 4, 7–11
— Coronopus, L. 1–4, 7, 8, 11, 13
Littorella lacustris, L. 2–4, 6, 7, 13
var. hirsuta, Leight. 4

### Illecebraceae

Scleranthus annuus, L. 1–4, 7–11, 13

### Amaranthaceae

Amaranthus retroflexus, L. 4

### Chenopodiaceae

Chenopodium polyspermum, L. 4, 7, 8, 10, 12
— album, L. 7–10, 13
var. viride, Syme. 11, 13
— candicans (Lamk.). 8
— murale, L. 4
— urbicum, L. 7–9
— rubrum, L. 8, 9
— Bonus Henricus, L. 2–5, 7–13
Atriplex patula, L. 4, 5, 7
var. erecta, Huds. 13
var. angustifolia (Sm.). 8, 13
— hastata, L. 2, 5, 9, 13

POLYGONACEAE

Polygonum Convolvulus, L. 1, 2–4, 7–10
var. subalatum, Van Hall. 4, 8, 13
— aviculare, L. 4, 7–9
var. agrestinum (Jord.). 3, 8
var. vulgatum, Syme. 8, 10
— Hydropiper, L. 1, 4, 6–9
— mite, Schrank. 11
— Persicaria, L. 1, 4, 7–10
var. elatum, Gren. and Godr. 3
— lapathifolium, L. 5, 7–10
— amphibium, L. 3, 4, 7, 9, 11, 13
var. terrestre, Leers. 8
— Bistorta, L. 1–13
Fagopyrum esculentum (Moench.). 7, 8
Rumex conglomeratus, Murr. 2, 6, 8, 13
— sanguineus, L. 4, 8, 10, 12
var. viridis, Sibth. 2, 6–10, 13
— maritimus, L. 2–4, 8, 13
— obtusifolius, L. 4, 7, 8
— crispus, L. 4, 7, 8
× acutus. 2
— Hydrolapathum, Huds. 2–4, 7, 8, 11–13
— Acetosa, L. 3, 4, 6–10
— Acetosella, L. 2–5, 7–11, 13

THYMELAEACEAE

Daphne Mezereum, L. 10
— Laureola, L. 3, 8, 10, 12, 13

LORANTHACEAE

Viscum album, L. 2–4, 7–12

EUPHORBIACEAE

Euphorbia Helioscopia, L. 1, 3, 4, 7–10, 12
— amygdaloides, L. 2, 4, 6–13
— Cyparissias, L. 9
— Peplus, L. 4, 7–10
— exigua, L. 3, 4, 7–13
— Lathyrus, L. 2, 11
Buxus sempervirens, L. 5, 10
Mercurialis perennis, L. 2–4, 7–11
— annua, L. 4

URTICACEAE

Ulmus montana, Stokes. 4, 5, 7–11, 13
— campestris, Sm. 4, 8, 10
var. suberosa, Ehrh. 8, 10
var. glandulosa, Lt. *Fl.* 10
Humulus Lupulus, L. 1–6, 8–12
Urtica dioica, L. 2–5, 7–10, 12
— pilulifera, L. 8
— urens, L. 2, 4, 7–11
Parietaria ramiflora, Moench. 2, 3, 5, 7–10, 12

MYRICACEAE

Myrica Gale, L. 2, 3, 7, 13

CUPULIFERAE

Betula verrucosa, Ehrh. 2–5, 7, 8, 10, 12
Alnus glutinosa, Gaertn. 1–5, 7–9
Carpinus Betulus, L. 4, 5, 8, 9, 13
Corylus Avellana, L. 2–5, 7–10
Quercus Robur, L. 3, 5, 8–10, 12, 13
var. intermedia (D. Don.). 3
var. sessiliflora (Salisb.). 4, 8–10, 12, 13
Castanea sativa, Mill. 2, 4, 8–10, 13
Fagus sylvatica, L. 2–5, 7–9

SALICINEAE

Salix triandra, L. 7, 8, 13
× fragilis. 13
× viminalis. 4
— amygdalina, L., Lt. *Fl.* 4, (?) 7, 9
— Hoffmaniana, Sm. 13
— pentandra, L. 2, 4, 8–11
— fragilis, L.
var. britannica, F. B. White. 4, 6, 8, 10, 11, 13
— Russelliana, Sm., Lt. *Fl.* 4, 10
— alba, L. 4, 10, 11
var. caerulea, Lt. *Fl.* 2
var. vitellina, L. 13
— cinerea, L. 4, 8, 10–13
— aquatica (Sm.). 2, 4, 9
— oleifolia (Sm.). 2–4, 11
— aurita, L. 4, 10
× cinerea. 11
— caprea, L. 2–4, 11, 13
— repens, L. 2, 7, 8
var. argentea, Lt. *Fl.* 3
var. foetida, Lt. *Fl.* 7
— viminalis, L. 2, 4
× caprea. 11, 13
var. stipularis (Sm.). 2, 7, 8, 11
var. ferruginea (G. And.). 2, 4
var. acuminata (Sm.). Common
— purpurea, L.
× viminalis. 2, 4, 8
— Lambertiana, Sm., Lt. *Fl.* 8
— Forbyana, Sm., Lt. *Fl.* 11
Populus alba, L. 5, 7–9, 12, 13
— canescens, Sm. 2, 10, 12, 13
— tremula, L. 5, 7–10, 12, 13
— nigra, L. 4, 7–13

EMPETRACEAE

Empetrum nigrum, L. 1–4, 9, 11

CERATOPHYLLEAE

Ceratophyllum demersum, L. 2, 3, 7, 8, 11

CONIFERAE

Juniperus communis, L. 10, 12, 13
Taxus baccata, L. 3–5, 7–13
Pinus sylvestris, L. 5, 10

HYDROCHARIDEAE

Elodea canadensis, Michx. 2–4, 7–9, 11, 13
Hydrocharis Morsus-ranae, L. 1–4, 7, 11
Stratiotes Aloides, L. 11

ORCHIDEAE

Neottia Nidus-avis, Rich. 1–3, 6–11, 13
Listera cordata, R. Br. 1, 4, 9
— ovata, R. Br. 1–4, 7–13
Spiranthes autumnalis, Rich. 8–13
Epipogum aphyllum, Sw. 9, 10
Cephalanthera ensifolia, Rich. 8, 9, 12, 13
Epipactis latifolia, All. 1–13
— atrorubens, Schultz. 4
— palustris, Crantz. 2, 3, 6–10, 12
Orchis pyramidalis, L. 3, 8–13
— ustulata, L. 8, 10, 13
— Morio, L. 2, 4, 7–13
— mascula, L. 1–5, 7–12

ORCHIDEAE (*continued*)

Orchis incarnata, L. 1, 2, 10, 13
— latifolia, L. 2, 4, 7, 9–11, 13
— maculata, L. 1–4, 7–13
× Habenaria conopsea. 3
Ophrys apifera, Huds. 8–13
— muscifera, Huds. 8
Habenaria conopsea, Benth. 1, 3, 7–10, 12, 13
— albida, R. Br. 8, 9.
— viridis, R. Br. 1–4, 7–13
— bifolia, R. Br. 1–4, 6–10, 12, 13
— chloroleuca, Ridley, 1–4, 7–11, 13

IRIDEAE

Iris foetidissimus, L. 4, 5, 10
— Pseudacorus, L. 1–4, 7–11, 13
Crocus vernus, All. 2, 10
— nudiflorus, Sm, 2, 4

AMARYLLIDEAE

Narcissus Pseudo-Narcissus, L. 2, 3, 5, 7–13
— biflorus, Curtis. 1, 8–10, 13
— poeticus, L. 3, 8–10
Galanthus nivalis, L. 2, 3, 8–11, 13

DIOSCOREAE

Tamus communis, L. 1–4, 6–12

LILIACEAE

Polygonatum multiflorum, All. 1, 10
Convallaria majalis, L. 2, 3, 7, 8, 12, 13
Allium vineale, L. 2, 7, 8, 10–13
var. compactum (Thuill.). 8, 13
— oleraceum, L. 8
— ursinum, L. 1–4, 8–13
Scilla festalis, Salisb. 2–4, 7–11
— alba, Lt. *Fl.* 3, 4, 7, 8
Ornithogalum umbellatum, L. 2, 8–10, 12, 13
— pyrenaicum, L. 13
Lilium Martagon, L. 4
Fritillaria Meleagris, L. 3
Tulipa sylvestris, L. 10
Colchicum autumnale, L. 2–4, 6–13
Narthecium ossifragum, Huds. 1, 2, 4, 7–10, 12
Paris quadrifolia, L. 1–4, 6, 8–13

JUNCACEAE

Juncus bufonius, L. 2, 4, 6–13
var. fasciculatus, Koch. 12
— squarrosus, L. 1, 4, 7–10, 12, 13
— compressus, Jacq. 12
— glaucus, Leers. 4, 7–13
— effusus, L. 7–10
× glaucus (diffusus, Hoppe). 13
— conglomeratus, L. 7–10
— supinus, Moench. 1, 2, 4, 7–13
— obtusiflorus, Ehrh. 2, 7, 8
— lampocarpus, Ehrh. 2, 7–10, 13
— acutiflorus, Ehrh. 2, 4, 7–10
Luzula vernalis, DC. 2–4, 7–13
— maxima, DC. 2, 4, 8–10, 12, 13
— campestris, DC. 1, 3, 8–11, 13
— erecta, Desv. 1, 2, 4, 7–10

TYPHACEAE

Typha latifolia, L. 2–4, 7–9, 11–13
— angustifolia, L. 2, 4, 7–10, 12

TYPHACEAE (*continued*)

Sparganium ramosum, Huds. (agg.). 2–4, 7–13
var. microcarpum, Neuman. 8, 11–13
— simplex, Huds. 2, 4, 7, 8, 10–13
— affine, Schnizl. } agg. 2–4, 7, 11
— minimum, Fr. }

AROIDEAE

Arum maculatum, L. 1–5, 8–11
Acorus Calamus, L. 7, 12, 13

LEMNACEAE

Lemna trisulca, L. 2–4, 7–9, 11–13
— minor, L. 2, 4, 5, 8, 10
— gibba, L. 2
— polyrhiza, L. 2, 4, 7

ALISMACEAE

Alisma Plantago aquatica, L. 1–5, 7–11
var. lanceolatum, Afz. 7, 13
— ranunculoides, L. 2–4, 7, 8
Elisma natans, Buchen. 2, 4, 7
Sagittaria sagittifolia, L. 2, 4, 7, 8, 10–12
Damasonium Alisma, Mill. 2, 7
Butomus umbellatus, L. 2, 4, 7–9, 11–13

NAIADACEAE

Triglochin palustre, L. 2, 4, 7–9, 11–13
Scheuchzeria palustris, L. 1, 2, 4
Potamogeton natans, L. 2, 3, 4, 7–9, 11, 12, 13
— polygonifolius, Pourr. 2, 4, 7–9, 12
— coloratus, Hornem, 2, 7
— alpinus, Balb. 2–4, 7, 11
— heterophyllus, Schreb. 2, 8
var. terrestris. Lt. *Fl.* 2
— lucens, L. 4, 9
— angustifolius, Presl. 2
— praelongus, Wulf. 2, 7, 11
— perfoliatus, L. 2, 4, 7–9, 11, 13
— crispus, L. 2–4, 7, 8, 10–13
var. serratus (Huds.). 2
× perfoliatus. 2
— densus, L. 8, 9
— zosteraefolius, Schum. 4
— obtusifolius, Mert. and Koch. 2, 4, 7
— Friesii, Rupr. 7, 12
— pussillus, L. 1, 2, 7, 8, 11–13
var. major. 2, 7, 8
var. tenuissimus, Koch. 11
— pectinatus, L. 2, 4, 7, 11, 13
var. scoparius. 11
— interruptus, Kit. 7
Zanichellia palustris, L. 2, 7, 13

CYPERACEAE

Eleocharis acicularis, R. Br. 2, 4, 7–9, 13
— palustris, R. Br. 2–4, 7–9, 11–13
— multicaulis, Sm. 2, 7, 8
Scirpus pauciflorus, Lightf. 4, 7, 8, 13
— caespitosus, L. 1, 2, 7, 12
— fluitans, L. 2, 4, 7, 8, 12
— setaceus, L. 2, 4, 7–13
— lacustris, L. 2–4, 7, 8, 11–13
— Tabernaemontani, Gmel. 2
— maritimus, L. 7
— sylvaticus, L. 2–4, 6–13
— Caricis, Retz. 8

CYPERACEAE (*continued*)

Eriophorum vaginatum, L. 1–4, 7–10, 12
— augustifolium, Roth. } 2, 4, 5, 7–13
— polystachion, L. }
var. pubescens, Sm. 10, 12, 13
— latifolium, Hoppe. 12
Rhynchospora alba, Vahl. 1, 2, 4, 7, 12
Cladium Mariscus, R. Br. 2, 7, 9
Carex dioica, L. 8
— pulicaris, L. 2–4, 7–9, 11–13
— disticha, Huds. 2, 4, 7, 11, 13
— teretiuscula, Good. 2–4, 7, 11, 13
— paniculata, L. 1–4, 7–9, 11, 13
— vulpina, L. 2–4, 7–9, 11–13
— muricata, L. 2–4, 6–9, 11–13
var. pseudo-divulsa. 4, 7, 8, 13
— divulsa, Good. 8
— echinata, Murr. 1–4, 7–9, 12, 13
— remota, L. 2–4, 6–9, 11–13
— axillaris, Good. 3, 12
— Boenninghausiana, Weihe. 3
— elongata, L. 2
— canescens, L. 1–4, 7–9
— leporina, L. 2–4, 7–11, 13
— elata, All. 2–4, 7, 8, 13
— acuta, L. 2, 4, 11–13
var. gracilescens, Almq. Salop
— Goodenowii, J. Gay. 2–4, 7–9, 11, 13
— flacca, Schreb. (=glauca). 1–4, 7–10, 12
— limosa, L. 1, 2, 4
— montana, L. 12
— pilulifera, L. 2, 4, 7–9, 11, 13
— verna, Chaix (praecox). 4, 7–10, 12, 13
— pallescens, L. 2–4, 7–13
— paniicea, L. 2–4, 7–9, 11–12
— pendula, Huds. 4, 8, 12, 13
— strigosa, Huds. 8, 12
— sylvatica, Huds. 2–4, 7–13
— laevigata, Sm. 8, 9
var. gracilis, Ar. Benn. Nr. Shrewsbury
— binervis, Sm. 4, 7–9
— distans, L. 7 8, 13
— fulva, Good. (=Hornschuchiana, Hoppe). 2–4, 7–9, 11, 13
— flava, L. 2–4, 7–13
var. elatior, Schlecht. 8
— filiformis, L. 2, 4, 8
— hirta, L. 2–4, 7–13
— Pseudocyperus, L. 2–4, 7–9, 11–13
— acutiformis, Ehrh. 1–4, 7, 8, 11–13
— riparia, Curtis. 2–4, 7, 8, 11–13
— rostrata, Stokes. 2–4, 7–9, 11, 13
— vesicaria, L. 2–4, 7–9, 11–13

GRAMINEAE

Setaria glauca, Beauv. 4.
Phalaris canariensis, L. 3, 4, 9, 13
— arundinacea, L. 2–4, 7–9, 11, 12
Anthroxanthum odoratum, L. 2, 4, 7–10, 13
Alopecurus myosuroides, Huds. 2, 8–10, 12, 13
— fulvus, Sm. 4, 11
— geniculatus, L. 2–5, 7–9, 13
— pratensis, L. 2, 3, 4, 8, 9, 13
Milium effusum, L. 2, 4, 6, 8, 9, 11, 13
Phleum pratense, L. 2, 4, 8–10
var. nodosum (L.). 8–10
Agrostis canina, L. 2, 5, 8–10

GRAMINEAE (*continued*)

Agrostis alba, L. 2, 4, 8
var. stolonifera (L). 9
— vulgaris, With. 5, 6, 8, 9
var. nigra, With. 2, 7, 8, 13
Calamagrostis epigeios, Roth. 7, 9
— lanceolata, Roth. 2, 4, 7.
Apera Spica-venti, Beauv. 9
Aira caryophyllea, L. 3, 4, 8, 9, 12
— praecox, L. 4, 7–9
Deschampsia caespitosa, Beauv. 2, 4, 8, 9
var. major. 4
— discolor, Roem and Schult. 2
— flexuosa, Trin. 2–4, 7–9, 11, 13
var. γ of Eng. Fl. 7
Holcus mollis, L. 2, 3, 4, 7–9.
— lanatus, L. 3–5, 8, 9, 13
Trisetum pratense, Pers. 2, 6, 8, 9, 13
Avena pubescens, Huds. 3, 7–9, 13
— fatua, L. 4, 7, 8, 10
Arrhenatherum avenaceum, Beauv. 2, 4, 7–10
var. nodosum, Reichb. 4, 8, 11, 13
Sieglingia decumbens, Bernh. 2, 4, 6–8, 11, 12
Phragmites communis, Trin. 2–4, 7–9, 11
Cynosurus cristatus, L. 3–5, 8, 9
Molinia coerulea, Moench. 4, 7, 8, 11, 12
var. robusta, Prahl. 4
Catabrosa aquatica, Beauv. 4, 7–11, 13
Melica nutans, L. 12
— uniflora, Retz. 3, 4, 6–10, 12, 13
Dactylis glomerata, L. 2–5, 7, 8, 9, 11, 13
Briza media, L. 1–4, 7–11
— minor, L. 4 (?)
Poa annua, L. 2, 4, 8–10, 13
— nemoralis, L. 2–4, 6, 8, 9
— compressa, L. 8, 9, 11, 13
— pratensis, L. 2, 4, 8, 9, 13
var. sub-caerulea (Sm.). 8
— trivialis, L. 2, 4, 8–10
Glyceria fluitans, R. Br. 2–4, 7–9, 13
— plicata, Fr.
var. pedicellata (Townsend). 6, 9, 13
— aquatica, Sm. 2, 7–9, 11–13
— distans, Wahlenb. 4
Festuca rigida, Kunth. 3, 8–13
— Myuros, L. 2, 4, 9–11
— sciuroides, Roth. 4, 8, 9, 11
— ovina, L. 4, 5, 8, 9
— rubra, L. 2, 4, 13
— elatior, L. 2, 4, 7–9, 11, 13
var. pratensis, Huds. 2, 4, 6, 7, 10, 13
— arundinacea, Schreb. 2, 4, 7, 8, 10
Bromus giganteus, L. 2–4, 6
— ramosus, Huds. 2, 4, 5, 7–9, 13
— erectus, Huds. 2, 8, 10, 13
var. villosus, Bab. 8, 10, 13
— sterilis, L. 2, 4, 5, 8, 9, 13
— secalinus, L. 4, 7–9
— racemosus, L. 7, 8, 12, 13
— commutatus, Schrad. 13
— mollis, L. 2–4, 8–10
— unioloides, H. B. K. 4
— squarrosus, L. 9
Brachypodium gracile, Beauv. 2, 4, 7, 8, 12, 13
Lolium perenne, L. 2, 4, 7–10, 13
var. italicum (Braun.). 8
— temulentum, L. 7, 8
var. arvense (With.). 4, 7, 9, 10

# BOTANY

GRAMINEAE (*continued*)

Agropyron caninum, Beauv. 5, 8, 12, 13
— repens, Beauv. 8, 9
var. barbatum, Duval-Jouve. 2, 4, 7, 8
Nardus stricta, L. 4, 7–12
Hordeum sylvaticum, Huds. 12, 13
— secalinum, Schreb. 2, 7–9
— murinum, L. 2, 4, 6, 8–10, 12, 13

## PTERIDOPHYTA

(*Vascular Cryptogams*)

FILICES

Hymenophyllum unilaterale, Bory. 3, 8, 9
Pteris aquilina, L. 1, 4, 5, 7–9
Lomaria Spicant, Desv. 1, 2, 4, 6–10, 12, 13
Asplenium Adiantum-nigrum, L. 1–13
— viride, Huds. 8 (?)
— Trichomanes, L. 3, 4, 6–13
— Ruta-muraria, L. 1–4, 6, 8–13
Athyrium Filix-foemina, Roth. 1–5, 7–9
var. incisum, Hoffm. 12
Ceterach officinarum, Willd. 3, 6, 10, 12
Scolopendrium vulgare, Symons. 1, 2, 4, 7–13
Cystopteris fragilis, Bernh. 2, 3, 6, 9, 10, 13
Polystichum lobatum, Presl. 2–5, 7, 9–12
var. aculeatum, Syme. 2, 4, 8–10, 12, 13
— angulare, Presl. 4, 8, 10–13
Lastrea Thelypteris, Presl. 2, 4, 7, 8
— Oreopteris, Presl. 1, 3, 6–13
— Filix-mas, Presl. 1, 2, 4–11
— spinulosa, Presl. 1–4, 7, 10–12
— dilatata, Presl. 1, 2, 9, 11
var. nanum, Newm. 13
Lastrea aemula, Brackenbridge. 13 (?)
Polypodium vulgare, L. 1, 3–5, 7–10
Phegopteris Dryopteris, Fée. 4, 6–13
— calcarea, Fée. 3, 9
— polypodioides, Fée. 3, 8–10, 12

FILICES (*continued*)

Osmunda regalis, L. 1–3, 7, 10, 12, 13
Ophioglossum vulgatum, L. 1–4, 7, 8, 10–13
Botrychium Lunaria, Sw. 1–4, 5, 8–11

EQUISETACEAE

Equisetum maximum, Lam. 2–4, 7, 8, 11–13
— arvense, L. 1, 4, 5, 7, 8, 10
— sylvaticum, L. 1, 2, 4, 7–13
— palustre, L. 2, 3, 9–13
— limosum, Sm. 2–4, 6, 7, 9, 13
var. fluviatile (L.). 13
— hyemale. 8, 10, 12

LYCOPODIACEAE

Lycopodium Selago, L. 4, 5, 8–10, 12
— clavatum, L. 4–12
— alpinum, L. 4

SELAGINELLACEAE

Selaginella selaginoides, Gray. 9
Isoetes lacustris, L. 4, 9

MARSILEACEAE

Pilularia globulifera, L. 3, 4, 12

## MUSCI

(*Mosses*)

It is only within recent years that any systematic effort has been made to obtain a complete account of the mosses of the county; and, considering the diversity of natural conditions, the list would be a longer one but for the fact that most of the botanists engaged in the work are men whose time is already fully preoccupied.

The record comprises 22 species of *Sphagnum* (Warnstorf's System), 260 species and subspecies of the other mosses (Dixon's *Students' Handbook*), total 282;[1] also 35 varieties = 317 forms, exclusive of 33 varieties of *Sphagnum* which are embraced in the 22 forms enumerated. Of the above a large number of species and varieties are not recorded for the Watsonian Province No. 5 in the *London Catalogue* (Mosses), ed. 2, 1880; and the larger proportion of the remainder have been observed for Shropshire, vice-county 40, within the last twenty years.

The data upon which the bryological history of the county rests are the following: Sir J. E. Smith's Correspondence, *Bryum roseum* and '*Bryum foliis juniperi*'—the latter not certainly identified—also two Hepatics, by the Rev. Littleton Brown, Bishop's Castle (*circa* 1730); *Historia Muscorum*, *Dillenius* (ed. 1741), 4 species, probably including the above; *The Phytologist*, vol. i, pt. 1 (1844), 29 species collected near Ludlow by Frederick Westcott, A.L.S., in 1842; Cathrall's *History of Oswestry* (1855), 5 species by the Rev. T. Salwey; *Transactions of the Severn Valley Naturalists' Field Club*, 1865–70 (1873), 130 species from within a radius of about ten miles round the Wrekin, by R. Anslow; Miss Sparkes, Bridgnorth, 13 species in the Shrewsbury Museum, dated 1878; Hobkirk's *Synopsis of the British Mosses*, 1873 and 1884, 2 species; Braithwaite's *British Moss Flora*, a few species; *Journal of Botany* (September, 1893), *Shropshire Mosses*, by R. de G. Benson, 226 species and 20 varieties; Horrell's *European Sphagnaceae* (1901), 8 species.

[1] Approximately, owing to diversity of nomenclature in different lists, and to a few doubtful cases.

*The Records of the Caradoc and Severn Valley Field Club* (1892–1906) represent the bulk of the work done, the principal contributors being Messrs. W. P. Hamilton, R. de G. Benson, A. W. Weyman, the Rev. W. Hunt Painter, and Mr. J. B. Duncan; the Rev. C. H. Binstead, the Rev. A. Ley, and others, have also furnished a few records.

A few species call for remark. *Octodiceras julianum* (Brid.) was discovered by Mr. J. B. Duncan, for the first time in Britain, in the Severn at Bewdley in Worcestershire in May, 1901, and identified by Mr. J. E. Bagnall, A.L.S. In June of the same year Mr. Duncan found it also at Hampton Loade in this county,[2] and it has since been observed as far up the river as Shrewsbury. This moss is allied to *Fissidens*, has similar leaves, but much narrower in proportion to the length than is usual in members of that genus, and grows submerged, with the habit of a small *Fontinalis*. *Grimmia-montana* (B. & S.) occurs on the Wrekin, the Ragleth, and the Longmynd, the first specimens having been identified by the Rev. C. H. Binstead. *Cinclidotus riparius*, being given for Shropshire in the *British Moss Flora*, should be referred to here. A plant collected by Mr. Weyman in the River Teme at Ludlow in 1891 was determined as this species, but doubts were entertained about it later on, and it is now believed by some of our leading bryologists to be a form of *C. fontinaloides*. *Sphachnum ampullaceum*, L., The Stiperstones, Benson; and *Tetreplodon mnioides*, B. & S., Titterstone, Ley, should be mentioned. *Orthodontium gracile* (Wils.) Schwg., was found in very small quantity by the writer near Hodnet, in April, 1892. The *British Moss Flora* gives only five other British and two French stations for this moss. *Bryum Duvalii*, Voit., occurred among some specimens looked at for Mr. Weyman, from the Longmynd, 1893. *Bryum rubens*, Mitt., from two localities by Mr. Benson, appears to be sufficiently distinct to stand as a species, although placed as a sub-species of *B. erythrocarpum*, Schwg., by Mr. H. N. Dixon. A form of *Fontinalis* grows in the Severn near Shrewsbury, agreeing very well with *F. dolosa*, Card., except that the leaves are less liable to split on being mounted on a slide than is the case with the original moss from Bedfordshire by Saunders, 1882. Unfortunately, there was no fruit present. *Amblystegium Juratzkae*, Schimp., in good typical form, was found on a tree-stump at Betton Pool. It occurs in other localities, but with more or less of an approach to *A. serpens*. A new variety of *Hypnum fluitans*, L., has been determined by Mr. Dixon as var. *atlanticum*, Renault. An inspection, however, of the moss *in situ* tends to give the impression that this, and perhaps some other named forms as well, represent transitory conditions of the same plants. An elegant form of *H. cuspidatum* grew submerged in a small artificial pool, having pinnate stems and complanate leaves, and a strikingly different habit from the type.

*Buxbaumia aphylla*, L., merits a notice from its having been found in Worcestershire by Mr. Duncan within a few feet of the boundary which divides the two counties. It is an interesting fact that in one part at least of Whixall Moss the peat consists entirely of *Sphagnum Austini*, Sull. (*S. imbricatum*, Russ.). At 1 ft. 9 in. below the surface, where the light-coloured upper stratum had been cut for 'moss litter,' the plants were in a sufficiently good state of preservation to admit of making sections of the leaves for the microscope. At a depth of 2 ft. 3 in. the material was darker in colour, but consisted of the same species, only more closely compacted. The 'black' peat at a depth of 5 ft. still retained traces of similar structure, but not in a condition to admit of identification. *S. Austini* is not known to be extant in the county, but has been recently discovered in North Wales by Mr. D. A. Jones.

Many British botanists having adopted Dr. Warnstorf's arrangement of the *Sphagna*, there seemed to be no practical objection from one point of view to following that system below. A full synonymy will be found in *The European Sphagnaceae*, by Mr. Charles Horrell, F.L.S., to whom the writer is indebted for the examination of a large number of specimens.

The above system will not ultimately be accepted by all British bryologists, and is not adopted by Mr. H. N. Dixon in the second edition of the *Students' Handbook of British Mosses*. So far as it proceeds upon definite characters derived from the position of the chlorophyllose cells and the pores in the walls of the hyaline cells, it works fairly well, except that it sometimes leads to the grouping together of very diverse forms. But it is in the 'varieties' that the greatest objection lies, especially in those based upon minute differences in colour. Anyone interested must have observed how a large tussock of *Sphagnum* shades off into different tints, but time may be more usefully occupied than in a hopeless attempt to decide to which particular variety a given plant should be ascribed, especially as a named dry specimen may add to the confusion.

There are some long recognized varieties of *S. acutifolium*, Ehrh., which these remarks do not affect.

The quadrinomial system of nomenclature,[3] where it applies, is used here, because, whatever may be said of it in regard to phanerogams, it will, in the cryptogams, be acceptable to a large number of botanists, especially the older. A name which at a glance suggests plant, history, and

[2] See *Journ. Bot.* July, 1901, and Feb. 1902.

[3] i.e. in the sense that the name of the author forms part of the name of the plant.

synonymy all combined, is undoubtedly of great value; and of the many objections urged against the use of the 'quadrinomial' one only has weight, viz. the extra amount of typographical labour —and consequent expense—involved.

Thanks are due to Messrs. J. E. Bagnall, H. N. Dixon, Dr. Braithwaite, and the Rev. C. H. Binstead, among many others, for assistance in the determination of specimens.

The order and nomenclature are those of the *Students' Handbook of British Mosses* referred to above. The numerals indicate the botanical divisions of the county already described. When a common species does not appear under a number, it does not imply that it is absent from that division, but merely that it has not been noted. The *Catalogue* of the Moss Exchange Club was issued while this was in the press.

Some plants were collected near a boundary line, in which case both divisions are inclosed within round brackets, thus: (2, 3), (11, 13).

Sphagnum fimbriatum, Wils. 7, 13
var. tenue, Grav. 7
— rubellum, Wils. 4, 5, 7–10
var. purpurascens, Warnst. 4
var. versicolor, Russ. 4
— sub-nitens, Russ. and Warnst. 4, 5, 7–13
var. flavescens, Warnst. 7
var. flavo-rubellum, Warnst. 8.
var. versicolor, Warnst. 4–9, 11
var. violascens, Warnst. 10
var. virescens, Warnst. 11, 13
— squarrosum, Pers. 8, 9, 11
var. spectabile, Russ. 8, 9
— teres, Angstr. 4, 8, 11
var. imbricatum, Warnst. 11
var. subsquarrosum, Warnst. 4, 8, 12
— cuspidatum (Ehrh. p. p.), Russ. and Warnst. 7, 8
var. falcatum, Russ. 7
var. submersum, Schimp. 7
var. plumosum, N. and H. 1, 7
— trinitense, C. Müll. 7
— pulchrum (Lindb. Warnst.). 7, 8
— Torreyanum, Sull. 7
— recurvum, Russ and Warnst. 4, 7–10, 12
var. amblyphyllum, Warnst. 4, 8, 12
var. mucronatum, Warnst. 4, 8, 9
— molluscum, Bruch. 7, 10
— compactum, DC.
var. imbricatum, Warnst. 9
var. subsquarrosum, Warnst. 9
var. imbricatum, Warnst. 9
— contortum (Schultz), Limpr, non N. and H. 4, 8
— inundatum, Warnst. 4, 5, 8–10, 12
— Gravetii, Warnst. 7, 8
— rufescens, Warnst. 8–10, 12
— crassicladum, Warnst. 4
— obesum (Schimp.), Warnst. 9
— imbricatum (Hornsch.), Russ. [7]
— cymbifolium (Ehrh.), Warnst. 1, 4, 7, 8, 10–13
var. carneum, Warnst. 4
var. glaucescens, Warnst. 7, 8, 12
— papillosum, Lindb. 1, 4, 7–9
var. normale, Warnst. 4, 7–9
var. sub-laeve, Limpr. and Warnst. 4, 7, 10
— medium, Limpr., var. roseum, Warnst. 7
Andreaea petrophila, Ehrh. 5, 10
— Rothii, W. and M. (10, 12) 11
Tetraphis pellucida (L.), Hedw. 2–4, 7, 8, 10–13
Catharinea undulata (L.), W. and M. 1–13
Polytrichum nanum, Neck. 4, 7, 8, 11
— aloides, Hedw. 2, 3, 7–9, 11–13
— urnigerum, L. 9, 11
— alpinum, L. 4, 5, 9, 10.
— piliferum, Schreb. 3, 4, 6–13
Polytrichum juniperinum, Willd. 1, 2, 4, 6–9, 11–13
— gracile, Dicks. 4, 7, 8, 10, 1,13
— formosum, Hedw. 3–5, 7–13
— commune, L. 1, 2, 4, 5, 7–13
Archidium alternifolium (Dicks.), Schimp. 12
Pleuridium axillare (Dicks.), Lindb. 4, 8, 10, 12
— subulatum (Huds.), Rabnh. 4, 7–9, 11–13
— alternifolium (Kaulf), Rabenh. 4, 9–11
Ditrichum homomallum (Hedw.), Hampe. 3, 4, 8, 9
— flexicaule (Schleich), Hampe. 8, 9, 10–12
Seligeria Doniana (Sm.), C. M. 12, 13
— recurvata (Hedw.), B. and S. 12
Ceratodon purpureus (L.), Brid. 1–13
Rhabdoweissia fugax (Hedw.), B. and S. 4 (8, 9)
— denticulata (Brid.), B. and S. 10
Cynodontium Bruntoni (Sm.), B. and S. 4, 7–11, 13
Dichodontium pellucidum (L.), Schimp. 2, 4, 8–10, 12, 13
— flavescens (Dicks.), Lindb. 4, 8, 12, 13
Dicranella heteromalla (Dill.), Schimp. 2–4, 6–13
— cerviculata (Hedw.), Schimp. 1, 4, 7, 8, 11–13
— rufescens (Dicks), Schimp. 4, 8, 13
— varia (Hedw.) Schimp. 4, 7–10, 12, 13
var. callistoma (Dicks.), B. and S. 4, 8
— Schreberi (Sw.), Schimp. 4, 8, 11, 13
var. elata, Schimp. 8
— squarrosa (Schrad.), Schimp. 4, 8–10, 13
Blindia acuta (Huds.), B. and S. 9, 10
Dicranoweissia cirrata (L.), Lindb. 1–13
— crispula (Hedw.), Lindb. (11, 13)
Campylopus flexuosus (L.), Brid. 2, 4, 9, 12, 13
var. paradoxus (Wils.), Husn. 4, 7, 12
— pyriformis (Schultz), Brid. 4, 6–8, 10, 11
— fragilis (Dicks.), B. and S. 1, 3, 4, 8, 12, 13
— setifolius, Wils. 4, 8, 11
Dicranum Bonjeani, De Not. 4–10, 12
— scoparium (L.), Hedw. 2–13
var. orthophyllum, Brid. 5, 8, 9, 11
var. spadiceum, Boul. 10
— majus, Turn. 3–6, 8, 9, 11, 12
— fuscescens, Turn. 4, 9
— montanum, Hedw. 13
Leucobryum glaucum (L.), Schimp. 4, 7, 13
Fissidens exilis, Hedw. 4, 11
— viridulus (Sw.), Wahl. 2, 4, 10–12
— pusillus, Wils. 4, 12, 13
— incurvus, Starke. 4, 7
— tamarindifolius (Don.), Wils. 7
— bryoides (L.), Hedw. 1–4, 7–13
— crassipes, Wils. 10, 12, 13
— osmundioides (Sw.), Hedw. 8
— adiantoides (L.), Hedw. 4, 8–12
— decipiens, De Not. 4, 7–9, 13
— taxifolius (L.), Hedw. 2, 4, 5, 8–13

Octodiceras Julianum, Brid. 2, 4, 12, 13
Grimmia apocarpa (L.), Hedw. 3–13
var. rivularis (Brid.), W. and M. 4, 12
— incurva, Schwg. 10, 12
— pulvinata (L.), Sm. 1, 2, 4–13
— trichophylla, Grev. 4, 7–9, 11–13
— Doniana, Sm. 9, 10
— montana, B. and S. 9, 11
Rhacomitrium aciculare (L.), Brid. 4, 8–10, 12
— protensum, Braun. 4, 8, 9
— fasciculare (Schrad.), Brid. 8–12
— heterostichum (Hedw.), Brid. 3–5, 7 13
var. gracilescens, B. and S. 10, 12
— lanuginosum (Hedw.), Brid. 4, 8–13
— canescens (Timm), Brid. 4, 7–10, 12
var. ericoides, B. and S. 4, 10, 12
Ptychomitrium polyphyllum (Dicks.), Fürnr. 2, 6, 8, 9, 11–13
Hedwigia ciliata (Dicks), Ehrh. 4, 6–10
Acaulon muticum (Schreb.), C. M. 4, 7, 8
Phascum cuspidatum, Schreb. 2, 4, 8–13
var. piliferum (Schreb.), H. and T. 13
var. Schreberianum (Dicks.), Brid. 8
Pottia bryoides (Dicks.), Mitt. 4, 11
— truncatula (L.), Lindb. 3–5, 7–9, 11–13
— intermedia (Turn.), Fürn. 4, 5, 8, 12, 13
— Wilsoni (Hook.), B. and S. 8
— minutula (Schl.), Fürnr. 4, 8, 10
— lanceolata (Hedw.), C. M. 8, 11, 13
Tortula aloides (Koch), De Not. 4, 8–10, 12, 13
— marginata (B. and S.), Spruce. 8, 12, 13
— muralis (L.), Hedw. 1–13
— subulata (L.), Hedw. 2–4, 6, 8–13
— mutica, Lindb. (1, 3), 4, 9, 10, 12, 13
— laevipila (Brid.), Schwg. 4, 7–12
— intermedia (Brid.), Berk. (2, 3), 4, 7, 8, 10, 13
— ruralis (L.), Ehrh. 2, 4, 6–13
— princeps, De Not. 4, 7
— papillosa (C. M.), Wils. 9
Barbula lurida (Hornsch.), Lindb. 4, 8, 11–13
— rubella (Hoffm.), Mitt. 2, 4, 6–13
— tophacea (Brid.), Mitt. 4, 7, 8, 10–13
— fallax, Hedw. 2–5, 7–13
— spadicea, Mitt. 10, 12, 13
— rigidula (Hedw.), Mitt. 2, 3, 7, 10, 13
— cylindrica (Tayl.), Schimp. 2–4, 7–13
— vinealis, Brid. 4, 8, 10, 12
— sinuosa (Wils.), Braith. 10, 12
— Hornschuchiana, Schultz. 4, 8, 9
— revoluta (Schrad.), Brid. 13
— convoluta, Hedw. 2, 4, 5, 7–13
— unguiculata (Huds.), Hedw. 1–13
var. cuspidata, Braith. 7
Leptodontium flexifolium (Dicks.), Hampe. 4, 7–9, 11
Weissia crispa (Hedw.), Mitt. 8, 11
— microstoma (Hedw.), C. M. 4, 7–9, (10, 12)
— viridula (L.), Hedw. 2–4, 6–13
— muconata, B. & S. 8, 10
— tenuis (Schrad.), C. M. 4, 12
— verticillata (L.), Brid. 10, 12, 13
Trichostomum crispulum, Bruch. 12
— mutabile, Bruch.
var. littorale, Mitt. 9, 12
— tenuirostre (H. & T.), Lindb. 8
— tortuosum (L.), Dix. 8, 12
Cinclidotus Brebissoni (Brid.), Husn. 12
— fontinaloides (Lam.), P. Beauv. 9, 10, 12, 13
Encalypta vulgaris, Hedw. 9–12
var. obtusifolia (Funck), *Br. Moss. Fl.* 10
— ciliata (Hedw.), Hoffm. 10 (?)
— streptocarpa, Hedw. 4, 7–13
Zygodon Mougeotii (Bruch), B. & S. 4, 8, 9, 13
— viridissimus (Dicks.), R. Br. 4, 6, 8–10, 12
— Stirtoni, Schimp. 12
Ulota Bruchii, Hornsch. 8, (11, 13)
— crispa (Gmel.), Brid. 2, 7–9, 12, 13
var. intermedia (Schimp.), Dix. 6, 12
var. crispula (Bruch), Hamm. 9
Orthotrichum rupestre, Schleich. 9
— anomalum, Hedw.
var. saxatile (Schimp.), Milde. 8, 12
— leiocarpum, B. & S. 8
— Lyellii, H. and T. 2, 4, 6, 8–10
— affine, Schrad. 4–13
— rivulare, Turn. 4
— Sprucei, Mont. 2, 4
— stramineum, Hornsch. 11
— pulchellum, Brunton. 11
— diaphanum, Schrad. 4, 5, 8, 9, 12, 13
Schistostega osmundacea (Dicks.), Mohr. 4, 8, 12
Splachnum ampullaceum, L. 4
Tetraplodon mnioides (Sw.), B. & S. 10, 12
Ephemerum serratum (Schreb.), Hampe. 4, 11
Physcomitrella patens (Hedw.), B. & S. 4, 9
Physcomitrium pyriforme (L.), Brid. 4, 8–13
Funaria fascicularis (Dicks.), Schimp. 4, 8, 11
— ericetorum (Bals. and De Not), Dix. 7, (8, 9)
— calcarea, Wahl. 4
— hygrometrica (L.), Sibth. 2–4, 6–13
Aulacomnium palustre (L.), Schwg. 1, 3, 4, 7–10, 12, 13
— androgynum (L.), Schwg. 3, 4, 7–9, 11–13
Bartramia ithyphylla, Brid. 5, 8, 9
— pomiformis (L.), Hedw. 2, 4, 6–13
Philonotis fontana (L.), Brid. 4, 5, 7–9, 11, 12
— calcarea, Schimp. 4, 5, 8, 9, 12
— capillaris, Lindb. 12
Breutelia arcuata (Dicks.), Schimp. 4, 8–10
Orthodontium gracile (Wils.), Schwgr. 7
Leptobryum pyriforme (L.), Wils. 2–4, 7, 8, 10, 12
Webera elongata (Hedw.), Schwg. 7, 9
— cruda (L.), Schwg. 10
— nutans (Schreb.), Hedw. 1, 2, 4, 7–13
var. longiseta (Brid.), B. and S. 1, 7
— annotina (L.), Schwg. 13
— carnea (L.), Schimp. 3, 4, 6, 8–13
— albicans (Wahl.), Schimp. 4, 5, 8–13
Bryum pendulum, Schimp. 1–3, 8, 10, 11
— inclinatum (Sw.), Bland. 2, 4, 7–9, 11, 13
— fallax, Milde. 9 (?)
— pallens, Sw. 4, 7–12
— Duvalii, Voit. 9
— bimum, Schreb. 2, 4, 8, 11–13
— pseudo-triquetrum (Hedw.), Schreb. 8–10, 12, 13
— intermedium, Brid. 4, 10, 11, 13
— caespiticium, L. 1–4, 6–13.
— capillare, L. 1–13
var. macrocarpum, Hübn. 4, 7, 8, 12, 13
var. flaccidum, B. and S. 2
— erythrocarpum, Schwg. (non Brid.). 2, 4, 8, 12
— rubens, Mitt. 8
— atropurpureum, W. and M. 2, 4, 7, 8, 11

# BOTANY

Bryum murale, Wils. 8, 9
— alpinum, Huds. 8, 9, 13.
— argenteum, L. 2, 4–9, 11–13
— roseum (Weiss), Schreb. 3–9, 11, 12
Mnium affine, Bland. 7
var. elatum, B. and S. 4, 9
— cuspidatum, Hedw. (non Neck.). 3, 4, 7, 8, 12, 13
— rostratum, Schrad. 2, 4, 7–10, 12, 13
— undulatum, L. 2–5, 7–13
— hornum, L. 1–4, 6–13
— serratum, Schrad. 10, 12, 13
— stellare, Reich. 4, 8–10, 12, 13
— punctatum, L. 4, 8–13
— sub-globosum, B. and S. 5, 8–12
Fontinalis antipyretica, L. 2–4, 7–9, 12, 13
— dolosa, Card. 4
— squamosa, L. 13
Cryphea heteromalla (Hedw.), Mohr. 4, 8
Neckera crispa (L.), Hedw. 4, 12, 13
— complanata (L.), Hübn. 4, 6–13
Homalia trichomanoides (Schreb.), Brid. 4, 8, 9, 11
Pterygophyllum lucens (L.), Brid. 4, 8, 11–13
Leucodon sciuroides (L.), Schwg. 2, 4, 8–12
Porotrichum alopecurum (L.), Mitt. 4, 7–13
Leskea polycarpa, Ehrh. 2, 4, 7, 10–13
Anomodon viticulosus (L.), H. and T. 4, 8–10, 12, 13
Heterocladium heteropterum (Spruce), B. and S. 4, 8, 10
var. fallax, Milde. 8, 12
Thuidium tamariscinum (Hedw.), B. and S. 2, 4–13
Climacium dendroides (L.), W. and M. 4, 7–13
Isothecium myurum (Poll.), Brid., *vide* Eurhynchium
Pleuropus sericeus (L.), Dix. 1–4, 6–13
Camptothecium lutescens (Huds.), B. and S. 8, 11, 12
— nitens (Schreb.), Schimp. 13
Brachythecium glareosum (Bruch), B. and S. 3, 9, 10, 12
— albicans (Neck.), B. and S. 4, 6, 8, 11, 13
— rutabulum (L.), B. and S. 1–13
— rivulare (Bruch), B. and S. 3, 4, 8, 9, 11–13
— velutinum (L.), B. and S. 2–4, 6–13
— populeum (Hedw.), B. and S. 4, 5, 7, 8, 11–13
— plumosum (Sw.), B. and S. 4, 8–10, 12, 13
— caespitosum (Wils.), Dix. 13
— illecebrum (Schwg.), De Not. (2, 3)
— purum (L.), Dix. 2, 4–13
Hyocomium flagellare (Dicks.), B. and S. 12
Eurhynchium piliferum (Schreb.), B. and S. 3–9, 12, 13
— crassinervium (Tayl.), B. and S. 9, 10, 12, 13
— speciosum (Brid.), Schimp. 3, 7
— praelongum (L.), B. and S. 1–13
var. Stokesii (Turn.), Brid. 3, 8, 9
— Swartzii (Turn.), Curnow. 2, 4, 7–13
— pumilum (Wils.), Schimp. 3, 4, 7, 12, 13
— Teesdalei (Sm.), Schimp. 4, 8, 12, 13
— tenellum (Dicks.), Milde. 8, 11–13
— myosuroides (L.) Schimp. 2–4, 6–13
Eurhynchium myurum (Poll.), Dixon. 4, 5, 8, 9, 11, 12
— striatum (Schreb.), B. and S. 2–10, 12, 13
— rusciforme (Weiss), Milde. 4, 7–10, 12, 13
— murale (Hedw.), Milde. 2, 4, 8, 11–13
— confertum (Dicks.), Milde. 1–4, 7–13
Plagiothecium depressum (Bruch), Dix. 4, 12, 13
— elegans (Hook.), Schimp. 2–4, 7–13
— denticulatum (L.), B. and S. 2–13
var. aptychus, *Lond. Cat.* 4
— sylvaticum (L.), B. and S. 2–5, 7, 8, 11–13
— undulatum (L.), B. and S. 4, 6–9, 11–13
— latebricola (Wils.), B. and S. 4, 12
Amblystegium serpens (L.), B. and S. 1–5, 7–13
— Juratzkae, Schimp. 4
— varium (Hedw.), Lindb. 12
— irriguum (H. and W.), B. and S. 4, 7–10, 12, 13
— fluviatile (Sw.), B. and S. 7–9, 12, 13
— filicinum (L.), De Not. 2–13
Hypnum riparium, L. 2, 4, 7, 8, 10–13
var. longifolium, Schimp. 8, 13
— elodes, Spruce, 7
— stellatum, Schreb. 4, 5, 8, 9, 11–13
var. protensum (Brid.), B. and S. 8
— chrysophyllum, Brid. 4, 8, 11–13
var. erectum, Bagn. 4
— Sommerfeltii, Myr. 4, 10
— aduncum, Hedw. 2, 4, 7–9
— fluitans, L. (4 ?), 7, 10, 12, 13
var. falcatum, Schimp. 7, 13
var. atlanticum, Ren. 9, 13
— exannulatum, Gümb. 4, 7–10, 12, 13
— uncinatum, Hedw. 4, 8, 13
— vernicosum, Lindb. 8, 9, 12
var. majus, Lindb. 8, 9
— revolvens, Sw. 4, 5, 8, 9, 12, 13
— intermedium, Lindb. 4, 8, 9
— commutatum, Hedw. (2, 3), 4, 8–10, 12, 13
— falcatum, Brid. 4, 7–9, 13
— cupressiforme, L. 1–4, 6–9, 11–13
var. resupinatum (Wils.), Schimp. 2, 4, 5, 8–10
var. filiforme, Brid. 2–4, 6, 7, 9, 11
var. ericetorum, B. and S. 3, 4, 7–9, 11–13
var. tectorum, Brid. 1, 4, 7–9, 12
var. elatum, B. and S. 9
— Patientiae, Lindb. 12
— molluscum, Hedw. 3, 4, 8–13
var. condensatum, Schimp. 8
— palustre, L. 1, 4, 8–13
— eugyrium, Schimp. 12
— scorpioides, L. 6, 8, 9, 12
— stramineum, Dicks. 4, 8–10, 12
— cordifolium, Hedw. 2, 4, 7, 8, 10–13
— giganteum, Schimp. 8, 9
— cuspidatum, L. 2, 4, 6, 8, 9, 11–13
— Schreberi, Willd. 3, 4, 6–13
Hylocomium splendens (Hedw.), B. and S. 4–13
— brevirostre (Ehrh.), B. and S. 4, 12
— loreum (L.), B. and S. 4–6, 8–10, 12, 13
— squarrosum (L.), B. and S. 2–13
— triquetrum (L.), B. and S. 2–13

## HEPATICAE

(*Liverworts and Scale Mosses*)

This interesting but difficult group of plants has until recently failed to find a local botanist possessing the all-essential combination of enthusiasm and time to devote to its study; and the smallness of the number recorded indicates the wide field still open for exploration. The smaller species often require a good deal of hunting for, but it seems remarkable that, for instance, the rich green tufts of such prominent plants as the two *Porellas* and *Scapania compacta*, which clothe ledges of rocks on some parts of Haughmond Hill, should so long have escaped record.

The order observed below is that of the Moss Exchange Club of British Hepaticae by Mr. Symers M. Macvicar, 1905.

To the above author we are indebted for much valuable assistance in the determination of difficult species.

Riccia glauca, L. 4
Ricciella fluitans (L.), Braun. 2
Ricciocarpus natans (L.), Cord. 2
var. terrestris. 2
Reboulia hemisphaerica (L.), Raddi. 9
Conocephalum conicum (L.), Dum. 4, 8, 12, 13
Lunularia cruciata (L.), Dum. 2, 4, 12, 13
Marchantia polymorpha, L. 2–4, 7, 9, 11–13
Aneura multifida (L.), Dum. 9
— sinuata, Dum. 4, 9
Metzgeria furcata (L.), Dum. 4, 7–9, 12
— conjugata, Lindb. 9
Pellia endivaefolia (Dicks.), Dum. 4, 8, 9, 12, 13
— epiphylla (L.), Dum. 4, 6, 8, 9, 12, 13
Frossombronia caespitiformis, De Not. 12
Marsupella emarginata (Ehrh.), Dum. 9, 12
Nardia scalaris (Schrad.), Gr. and Ben. 6, 8, 9, 12 13
Aplozia autumnalis (DC.), Schffn. 12
— crenulata (Sm.), Dum. 8, 12
— sphaerocarpa (Hook.), Dum. 12
— riparia (Tayl.), Dum. 9, 12
— pumila (With.), Dum. 10, 13
Lophozia inflata (Huds.), Howe. 12, 13
— turbinata (Raddi), Steph. 12, 13
— ventricosa (Dicks.), Dum. 4, 9, 10, 12
— excisa (Dicks.), Dum. 9
— quinquedentata (Huds.), Cogn. 9, 11
— barbata (Schmid), Dum. 11
— Floerkii (W. and M.), Schffn. 4, 9, 10, 13
— gracilis (Schleich), Steph. 4, 9
Plagiochila asplenoides (L.), Dum. 4, 8, 9, 10, 12, 13
var. major, Nees. 4, 8
Mylia Taylori (Hook), Gray. 7
Lophocolea bidentata (L.), Dum. 2, 4, 7, 8, 9, 12, 13
Lophocolea cuspidata (Nees), Limp. 4, 7, 9, 12
— spicata, Tayl. 8
— heterophylla (Schrad.), Dum. 3, 4, 8, 9, 11, 12
Chiloscyphus polyanthos (L.), Corda. 8, 9, 12
var. rivularis, Nees. 9
Saccogyna viticulosa (Sm.), Dum. 12
Cephalozia bicuspidata (L.), Dum. 1, 4, 7, 8, 11, 12, 13
— byssacea (Roth.), Warnst. non Hook. 9
Odontoschisma Sphagni (Dicks.), Dum. 7
Kantia trichomanis (L.), Gray. 7, 11, 12, 13
— Sprengelii (Mart.), Pears. 12
Bazzania trilobata (L.), Gray. 4
Lepidozia reptans (L.), Dum. 3, 4, 7, 9, 11
— setacea (Web.), Mitt. 7
Ptilidium ciliare (L.), Hampe. 7, 8, 9
Trichocolea tomentella (Ehrh.), Dum. 4, 6, 8, 9, 12
Diplophyllum albicans (L.), Dum. 3, 4, 7, 8, 9, 11, 12, 13
Scapania compacta (Roth.), Dum. 7
— aspersa, Bernet. 12
— gracilis (Lindb.), Kaal. (= S. resupinata). 10, 12
— nemorosa (L.), Dum. 4, 8, 12, 13
— purpurascens (Hook.), Tayl. 9
— undulata (L.), Dum. 9, 10, 12
— irrigua (Nees), Dum. 12, 13
— curta (Mart.), Dum. 8, 12
Radula complanata (L.), Dum. 4
Madotheca laevigata (Schrad.), Dum. 7, 12
var. obscura, Nees. 12
var. Thuja, Nees. 9
— platyphylla (L.), Dum. 4, 7, 8, 9, 12, 13
Lejeunia cavifolia (Ehrh.), Lindb. 4, 8, 9, 12
Microlejunia ulicina (Tayl.), Evans. 8
Frullania Tamarisci (L.), Dum. 9, 12
— dilatata (L.), Dum. 2, 4, 6, 8, 9, 12, 13

## ALGAE

In the year 1880 a small committee was appointed by the Caradoc Field Club to collect information on the 'breaking' of the water of the meres in the county. The results were published by the late Mr. William Phillips, F.L.S., in two pamphlets, reprints respectively from the *Transactions of the Shropshire Arch. and Nat. Hist. Society*, and the *Midland Naturalist*, 1893.

Mr. Phillips states that :—[1]

> The phenomenon consists in the periodical appearance, usually in the autumn, but sometimes in spring, of a turbid condition of certain meres. When in this state the water is unfit for domestic purposes, and is injurious to fishes.

[1] An abstract.

The term 'breaking of the mere' used by the country people is in allusion to the aspect presented by the wort of beer in the act of fermentation. In some parts of the county it is called 'cruddling,' i.e., curdling.

The cause of the 'breaking' is the extensive and rapid growth of certain microscopic algae, comprising, as far as this county is concerned, the following species, viz., *Clathrocystis aeruginosa*, Henf., *Coelosphaerium Kutzingianum*, Näg., *Anabaena Hassallii*, Nord. and Wittr., *Aphanizomenon flos-aquae*, Ralfs., *Nodularia Harveyana*, Thur., *Oscillaria aerugescens*, Drumm., and *Gloiotrichia* (*Rivularia*) *echinata*, Phillips. The meres affected were Apley Pool (? near Wellington, or near Bridgnorth); Berrington Upper Pool, Betton Pool, Bomere Pool [2] (all three to four miles S. and SE. from Shrewsbury); Blake Mere (or Blackmere), Cole Mere, Crose Mere, Ellesmere Mere,[2] Kettle Mere, Newton Mere White Mere (all in the north-west); Hawk Lake, Hawkstone (near Hodnet); and Marton Pool (near the western border).

Other algae have been noted from time to time embracing a few of the Characeae by the late Mr. W. E. Beckwith, and the Rev. W. H. Painter (named by Messrs. H. and J. Groves); some Desmids and Diatoms by Mr. Phillips and Mr. H. E. Forrest; and various members of other groups by the writer.

The order observed in the list which follows is that of Cooke's fine monograph, *British Fresh-Water Algae* (1884), but the investigations of the last twenty years have thrown so much new light on this interesting group of plants that old names should be revised where that is possible. The recent valuable treatise by Professor G. S. West (1904) deals exhaustively with the genera, but the scope of the work admits of only a few of the species. Some of the specimens were kindly identified by Mr. Wm. West, F.L.S.

Where (br.) is added it implies that the species is concerned in the 'breaking' of the meres.

The Characeae are placed first because to have given them the position assigned to the order by Professor Vines in the *Students' Text-Book of Botany* (1895) would have involved an entire rearrangement.

Chara fragilis, Desv. 4, *Bomere* (G. C. Druce). 11, *Wellington* reservoir. (See also *Journ. of Bot.*, 1880)
var. barbata, Gant. Salop (*Journ. Bot.*, 1886)
var. delicatula, Braun. Salop (*Journ. Bot.*, 1880)
— hispida, L. Salop (*Journ. Bot.*, 1880)
var. rudis, Braun. 4, *Bomere* (G. C. Druce). 7, *Crosemere* (*Journ. Bot.*, 1880). 9, *Rushbury*, station yard
— vulgaris, L. Salop (*Journ. Bot.*, 1883). 13, *Shifnal*
Nitella gracilis, Agardh. Salop (R. F., 1904) *Caradoc and Severn Valley Club Records*, 1904.
— translucens, Ag. Salop (*Journ. Bot.*, 1880)
— flexilis, Ag. 9, *Longmynd; Ratlinghope Common* (*Journ. Bot.*, 1898)
— opaca, Ag. Salop (*Journ. Bot.*, 1880). 4, *Bomere* (G. C. Druce)

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Eremosphaera viridis, De Bary. 1, *Welshampton, Moss*
Pleurococcus vulgaris, Meneg. 2, The Quarry trees, *Shrewsbury*. 4, *Cherry Orchard*. 11, *Weald Moors*
— angulosus (Corda), Meneg. 4, *Monkmoor*. 8, *Wrentnall*
Palmella mucosa, Kutz. 4, Near *The Oaks*
— hyalina, Breb. 3, *Shrawardine Pool*
Tetraspora gelatinosa (Vauch.), Cooke. 8 (or ? 9), *Church Stretton*
Rhaphidium falcatum, Corda. 8, *Wrentnall*
Chlorococcum frustulosum (Näg.), Rabh. 4, *Emstrey Rough*
Ophiocytium cochleare, Braun. 2, *Ellesmere*
Volvox globator, L. 7, *Hawkstone*
Gonium pectorale, Müll. 4, Near *Nobold*

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Closterium setaceum. 7, *Crosemere*
— acerosum (Schrank), Ehrenb. 4, *Berrington*
— Jenneri. 4, *Berrington*
Penium digitum. 4, *Bomere Pool*
Docidium Ehrenbergii. 4, *Bomere Pool*
Spirotaenia condensata, Breb. 4, *Bomere Pool*
Micrasterias denticulata, Breb. 11, *Hodnet*
Cosmarium margaritiferum. 5, *Marton Pool*
Hyalotheca dissiliens (Sm.), Breb. 4, *Bomere Pool* 11, Near *Hodnet*
Desmidium Swartzii, Ag. 11, *Hodnet*

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Spirogyra jugalis (Dillw.), Kutz. 7, *Prees Pool*
— porticalis, Vauch.
var. rivularis, Hass. 4, *Berrington*
— condensata (Vauch.), Kutz. 4, *Highfields*. 7, *Prees Pool*
— velata, Nordst. 7, *Prees Pool*
— longata (Vauch.), Kutz. 4, *Highfields*
var. turpis, Kutz. 2, *Hencote Pool*. 4, *Plealey*
— flavescens (Hass.), Cleve. 2, *New Park*
— Weberi, Kutz. 4, *Berrington*
— tenuissima (Hass.), Kutz. 4, *Crowmere; Plealey*
Sirogonium sticticum (*Eng. Bot.*), Kutz. 5, *Stapeley Hill*
Mougeotia laevis (Kutz.), Archer. 4, *Cherry Orchard*
Vaucheria aversa, Hass. 4, *Monkmoor*
— sessilis, Vauch. 2, *Hencote Pool*. 4, *Judith Butts; Kingsland; Betton*

[2] The redundancy is locally common, e.g., Mare Pool—Mere Pool.

Vaucheria hamata, Vauch. 2, *Hencote Pool*
Prasiola crispa (Hass.), Kutz. 2, 4, *Shrewsbury*
Enteromorpha intestinalis (L.), Link. 7, *Hawkstone; Prees Pool.* 10, *Ludlow*
Microspora abbreviata (Rabenh.), Lagerh. 4, *The Sharpstones* and *Conduit Head*
Tribonema (Conferva), bombycina (Ag.). Derb. and Sol., f. minor (Wille). 7, *Uffington*
Cladophora fracta (Dillw.), Kutz. 7, *Upton Magna*
— flavescens (*Eng. Bot.*), Ag. 4, *Kingsland*
Œdogonium vernale (Hass.), Wittr. 4, *Highfields*
— ciliatum (Hass.), Prings. 4, *Sharpstones*
Ulothrix radicans, Kutz. 2, The Quarry, *Shrewsbury.* Racecourse, Abbey church wall, &c.
— parietina (Vauch.), Kutz. 4, *Monkmoor Rd.* 7, *Haughmond Hill*
Chroolepus aureus (L.), Kutz. 12, *Caughley Wood*
Stigeoclonium protensum (Dillw.), Kutz. 4, *Shomere Moss*
Draparnaldia glomerata (Vauch.), Ag. 4, *Shomere; Plealey lanes.* 8, (? 9), *Church Stretton*
— plumosa (Vauch.), Ag. 4, *Underdale*
Chaetophora elegans (Roth.), Ag. 4, *Cherry Orchard.* 8, (? 9), *Church Stretton*
Coleochaete scutata, Breb. 2, *Ellesmere*
Clathrocystis aeruginosa, Henf. 5, *Marton Pool* (br.). 7, *Hawkstone*, but not noted as concerned in the breaking
Coelosphaerium Kutzingianum, Näg. 2, *Newton Mere* (br.). 4, *Bomere Pool* (br.); *Berrington Upper Pool* (br.). 7, *Crosemere*
Aphanothece stagnina (Spreng.), Rabh. 4, *Betton Pool; Lincroft Pool.* 7, *Prees Pool*
Anabaena Hassallii (Rabh.), Nord. and Wittr. 2, *Blakemere; Kettle Mere; Newton Mere; White Mere.* 4, *Berrington Upper Pool; Bomere Pool.* 7, *Hawkstone* and *Crosemere* (all br.)
Aphanizomenon flos-aquae (L.), Ralfs. 2, *Cole Mere* (br.). 4, *Betton Pool* (br.). 7, *Sundorne Pool*
Sphaerozyga Carmichaelii, Harv. 4, *Bomere Pool*
Nodularia Harveyana, Thur. 2, *Newton Mere* (br.)
Oscillaria tenerrima, Kutz. 7, *Crosemere*
— aerugescens, Drum. 11, *Apley Pool* (br.)
— antliaria, Jurgens. 4, *Burr's Lane;* near *Weeping Cross*
— muscorum, Carm. MSS. 4, *The Lydd Hole* stream
— limosa, Ag. 4, *Sutton*
— nigra, Vauch. 4, *Pontesford Hill*
Gloiotrichia pisum (Ag.), Thur. 4, *Betton Pool*
— (Rivularia) echinata (*Eng. Bot.*, Phillips). 2, *Whitemere; Ellesmere*
Batrachospermum moniliforme, Roth. 4, Near *Nobold; Underdale.* 8 (var. ?), *Benthall Edge.* 12, *Caughley Wood*
Lemania fluviatilis (Dill.), Ag. (Sacheria mamillosa, Sirodot). 4, *The Lydd Hole* stream; *The Severn, Monkmoor; Marton Dingle.* 9, Near *Horderley*
— torulosa (Roth.), Ag. 4, *The Severn, Monkmoor*

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Diatoma vulgare. 4, *Underdale*
Asterionella formosa. 5, *Marton Pool*
Synhedra radians. 4, Near *Smethcott*
Gomphonema ? 5, *Marton Pool*

## LICHENES

(*Lichens*)

The list was compiled by the late Mr. William Phillips, F.L.S., chiefly from Leighton's *Lichen-Flora of Great Britain*, 1879. Other records are from Mr. Phillips's own herbarium, extracted after his decease, to which are added a few of more recent dates.

The numbers of the county divisions against which an asterisk appears indicate that the actual records have not been traced. Other numbers in the original list, but which were evidently errors, have been erased.

Collema furvum, Ach. 3
— pulposum (Bernh.). 3, 13
var. ceranoides, Borr. 3
var. tenax, Ach. 3
— crispum (Huds.). 4
— melaenum, Ach. 3, 10
— flaccidum, Ach. 3
— fasciculare (L.). 4
— multipartitum, Sm. 3, 10
— nigrescens (Huds.). 3, 4, 8
Leptogium lacerum (Ach.). 3
var. pulvinatum (Hoffm.). 13
— sinuatum (Huds.). 3
— fragrans (Sm.). 3
— tremelloides (L.). 9
— dermatinum, Borr. 3
— turgidum (Ach.) 3, 13
— microscopicum, Nyl. 3
— musicolum (Sw.). 3
Sphinctrina turbinata (Pers.). 3, 4, 9
Calicium chrysocephalum, Ach. 4, 7
— phaeocephalum, Borr. 10
— trichiale, Ach. 9, 10
var. ferrugineum (Borr.). 2, 8
— hyperellum, Ach. 10
— trachelinum, Ach. 3, 10
— curtum, Borr. 3, 4, 6, 7, 9, 10, 13
Coniocybe furfuracea, Ach. 3, 4, 7–10, 13
Trachylia tympanella, Fr. 3, 4, 7, 11
— stigonella, F. 3, 7
Sphaerophoron compressum, Ach. 3
— coralloides, Pers. 3, 4, 8, 10
— fragile, Pers. 3, 4
Baeomyces rufus, DC. 2, 4, 7, 9
— placophyllus, Ach. 9
Cladonia papillaria, Duf. 3
— cervicornis, Schaer. 4
— delicata, Flk. Shropshire
var. subsquamosa, Nyl. Shropshire
— alcicornis, Flk. 7, 13

Cladonia pyxidata, Fr. 4, 7, 9
var. caespititia, Flk. Shropshire
— gracilis, Hoffm. 9
var. chordalis (Ach.). 4, 9, 11
— verticillata, Flk. 4*
var. sobolifera, Del. 8, 11
— furcata, Hoffm. 11
var. recurva, Hoffm. Shropshire
— squamosa, Hoffm. 7
— cornucopioides, Fr. 4, 8, 9, 11
— digitata, Hoffm. Shropshire
var. macilienta, Hoffm. 11
f. clavata (Ach.). 3, 7*, 9, 11
f. carcata, Ach. 8
f. ostreatiformis, Leight. 11
— Florkeana, Fr., var. bacillaris, Ach. 3, 4, 8–11
— sylvatica, Hoffm., f. scabrosa. 4, 9
f. pumila. 3, 7*
— rangiferina, Hoffm. 10
— uncialis, Hoffm. Shropshire
Stercocaulon paschale, Ach. 10
— denudatum, Flk. 3, 10
— condensatum, Hoffm. 3, 10
— nanum, Ach. 3, 9
Usnea barbata (L.), f. floride. 4, 10
f. hirta (L.). 2*, 7, 8, 10–12
f. articulata, Ach. 6, 7*
Alectoria jubata (L.). 3, 9–11
Evernia furfuracea, Mann. 3, 8, 11
— prunastri (L.). 3, 4, 7
var. stictocera, Ach. 3, 7*, 11
Ramalina calicaris, Hoffm. 3. Shropshire generally
var. subampliata, Nyl. 3
— farinacea (L.). 2–4, 7, 8
— fraxinea (L.). 8*, 11
f. ampliata, Ach. 2–4
— fastigiata, Pers. 3, 4, 6–8
— polymorpha, Ach. 3
f. ligulata, Ach, 8
— pollinaria, Ach. 7
f. elatior, Ach. 7
— evernioides, Nyl. 7
— scopulorum (Dicks.), var. subfarinacea, Nyl. 9
Cetraria aculeata, Fr. 3, 7
f. typica. 3, 4, 7, 8, 9*
f. muricata, Ach. 3, 4, 7, 9, 11
Platysma saepincola (Ehrh.). 2, 9*
var. ulophylla, Ach. 2, 4, 9*
— diffusum (Web.).=Aleurites, Ach. 2, 7, 9*, 10
— glaucum (L.). 3, 4, 10, 11
Nephromium laevigatum, var. parile (Ach.). 8
— lusitanicum, Schaer. 3
Peltigera apthosa (L.). 3
— canina (L.). *4, 7, 10
— malacea (Ach.). 3, 4, 9, 13
— rufescens (Hoffm.). 3, 4*, 7
— spuria (Ach.). 3, 4, 7, 9
— polydactyla, (Hoffm.). 3, 7, 10
— scutata (Dicks.). 3
— horizontalis (L.). 3, 6, 9, 11
Solorina saccata (L.). 9
Stictina fuliginosa (Dicks.). 9
— sylvatica (L.). 3
Sticta pulmonaria (Ach. pr. p.). 3, 10
Ricasolia amplissima (Scop.). 3
Parmelia caperata (L.), 3, 7
Parmelia olivacea (L.). 3, 4*, 7
var. exasperata (Ach.), 3, 4
var. dendritica (Pers.). 8
— physodes (L.). 4, 9, 11
var. recurva, Leight. 4, 7*, 9, 11
var. labrosa, Ach. 11
var. encausta (Sm.). 7*
— ambigua (Wulf.). 3, 10
— perlata (L.). 7
— tiliacea, var. scortea, Ach. 9
— Borreri (Turn.). 3, 4, 7
— fuliginosa (Dub.). 4, 7–9
f. olivacea Leight. Throughout Shropshire
— conspersa (Ehrh.). 3, 8, 11
f. stenophylla (Ach.). 3, 11
f. isidiata, Anzi. 11
— acetabulum (Neck.). 3
— saxatilis (L.). 4
var. sulcata, Tayl. 3, 4, 8*, 10
var. furfuracea (Schaer.) 3, 7, 9
var. omphalodes (L.). 3, 4
var. panniformis, Ach. 4
— laevigata (Sm.), var. revoluta (Flk.). 3, 10
Physcia parietina (L.) 3, 4, 7, 9, 10
var. aureola (Ach.). 3
var. lacinosa (Duf.). 4
var. polycarpa (Ehrh.). 4, 9
var. lychnea (Ach.). 3
f. tumida (Wedd.). 3
— ciliaris (L.). 7, 9
f. verrucosa (Ach.). 3
— pulverulenta (Schreb.). 3, 5*, 6–8*
f. pityrea (Ach.). 3, 10
f. venusta (Ach.). 2, 7
— obscura (Ehrh.). 3, 7
var. chloantha (Ach.). 3
var. virella (Ach.). 3, 4, 7, 13
— erosa (Borr.). 10
— stellaris (L.). 2–4
var. leptalea (Ach.). 3, 4
var. tenella (Scop.). 3, 7
var. caesia (Hoffm.). 9
— aquila (Ach.) 3
Umbilicaria pustulata (Hoffm.). 3, 7, 8
— polyphylla (L.). 3
f. monophylla, T. and B. 3, 4, 8, 9, 11
f. congregata (T. and B.). 3, 11
— flocculosa (Wulf.). 8
Psoroma hypnorum (Vahl.). 3, 10
Pannaria rubiginosa (Thunb.), var. coerulea-badia (Schleich). 3
— pezizoides (Web.), var. coronata (Ach.). Shropshire
— triptophylla (Ach.). 3
— nigra (Huds.). 3, 9, 13
— carnosa (Dicks.). 3
Amphiloma lanuginosum (Ach.). 3, 4, 7, 9
Squamaria crassa (Huds.). 3
— lentigera (Web.). 13
— saxicola (Poll.). 4, 7, 8
var. diffracta, Ach. 7
var. versicolor, Pers. 3
— gelida (L.). 4, 9
Placodium decipiens (Arn.). 3
— miniatum (Hoffm.). 3
— calopismum (Ach.). 3
var. plicatum, Wedd. 3, 9

Placodium citrinum (Ach.). 3, 4, 8
— candicans (Dicks.). 3, 11, 13
— chalybaeum (Duf.). 3
— variabile (Pers.). 3
— Agardhianum (Ach.). 3
Lecanora vitellina (Ach.). 7, 9
var. coruscans (Ach.). 7
var. aurella (Ach.). 7
— candelaria (Ach.). 12
var. granulosa (Leight.). 2
— glaucocarpa (Whlnb.). 3
f. pruinosa, Sm. 3, 4, 8, 13
f. encarpa (Nyl.). 8
— squamulosa (Schrad.). 7
f. simplex (Dav.). 9
fuscata, Schrad. 3, 4, 7, 8*, 11, 12*
— tartarea (L.). 10, 12*
— varia (Ehrh.). 2, 4, 7
— atra (Huds.). 4, 10
— leucophaea (Flk.). 8, 9
— polytropa (Ehrh.). 3, 7*
f. conglobata (Smrf.). 3
— intricata (Schrad.). 8
— sulphurea (Hoffm.). 4, 8
— symmicta (Ach.). 2, 4, 7, 10
var. saepincola (Ach.). 4, 7
— orosthea (Ach.). 9
— expallens, Ach. 4
— lutescens (DC.) 4, 8, 11, 13
— subfusca (L.), f. allophana, Ach. 3, 7, 11
f. rugosa (Pers.). 3
f. argentata, Ach. 10
f. coilocarpa, Ach. 3, 4, 7
f. gangalea, Ach. 3, 10
f. chlarona, Ach. 4, 7
— medians, Nyl. 3, 9*
— galactina (Ach.). 13
— umbrina (Ehrh.). 3
f. crenulata (Dicks.). 13
— calcaria (L.), f. concreta, Schaer. 3
f. contorta, Hoffm. 13
f. Hoffmanni (Ach.). 3, 7
— gibbosa (Ach.), f. vulgaris (Th. F.). 3
f. porinoidea, Flot. 4, 7*, 8–10
f. squamata, Flot. 8
— caesio-cinerea, Nyl. f. obscurata, Fr. 9
— flavida, Hepp. 8
— lacustris, With., f. punctata (Dicks.). 10
— Dicksonii (Ach.). 9, 11, 12
— badia, Ach. 3, 4, 7*, 8–10
f. picea, Dicks. 10
— parella (L.). 3, 7, 8
f. pallescens (L.). 3
— rupestris (Scop.), f. incrustans (DC.). 9
f. calva (Dicks.). 3, 9
f. rufescens (Hoffm.). 8, 13
f. viridi-flavescens (Wulf.). 9
— glaucoma (Hoffm.). 7, 8
— angulosa (Ach.). 3, 4, 7
— albella (Pers.). 7
— aurantiaca (Light.), var. erythrella, Ach. 3, 4
var. inalpina, Ach. 3, 7
— ferruginea, Huds., f. corticola, Leight. 7
f. saxicola, Leight. 7, 8
f. festiva (Ach.). 3
— cerina (Ehrh.). 3, 4
— pyracea (Ach.). 3
var. holocarpa (Ehrh.). 7, 9
Lecanora sophodes (Ach.). 3, 11
f. lecideoides (Nyl.). 3
f. metabolica, Ach. 3
f. roboris, (Duf.). 3
f. malangica (Norm.). 4, 7
— atrocineria (Dicks.). 4, 8
— holophaea (Mnt.). 4, 13
— erysibe (Ach.). 10
— rubra (Hoffm.). 3
— haematomma (Ehrh.). 3, 4, 7*, 10, 13
— ventosa (L). 10, 12
Pertusaria ceuthocarpa (Sm.). 2*, 3
— dealbata (Ach.). 3, 8
— communis, DC. 2*–4, 7, 11
— fallax (Pers.). 3, 4, 7, 8
— velata (Turn.). 3, 4, 7
— faginea (L.). 7
— globulifera (Turn.). 3
— leioplaca (Ach.). 3, 4, 7*
Phlyctis agelaea (Ach.). 2, 4, 7, 8
Thelotrema lepadinum, Ach. 7, 9
Urceolaria scruposa (L.). 4, 7, 9, 13
f. gypsacea (Ach.). 3
f. bryophila (Ach.). 3, 9, 13
— atro-rufa, (Dicks.). 8
Lecidea ostreata (Hoffm.). 7–9*, 11, 13*
— intumescens (Flot.). 4, 8, 9
— fuliginosa, Tayl. 8, 13
— sympathetica, Tayl. 8
— crustulata (Ach.). 3*, 7*, 8
— lucida, Ach. 3, 7
f. theiotea (Ach.). 13
— parissima, Nyl. 2, 4, 7
— flexuosa (Fries.). 7
f. aeruginosa (Borr.). 2, 3, 13
— spododes, Nyl. 3
— decolorans, Flk. 3, 4, 7*
f. escharoides (Ehrh ). 4, 11
f. aporetica, Kbr. 3, 9, 11
— vernalis (L.). Common in Shropshire
f. minor, Nyl. 3
— dubia, Borr. 4, 7, 10
— turgidula, Fr. Shropshire
— prasina (Fries.). 9
— quernea (Dicks.). 1, 3, 4, 7, 9
— viridescens (Schrad.). Shropshire
— sanguinaria (L.). 3
— enteroleuca, Ach. 3, 7, 8, 12, 13
— sanguinea-atra (Ach. pr. p.). 7
— parasema (Ach.). 3, 4, 7, 8, 10
var. flavens, Nyl. 4
var. elaeochroma, Ach. 3, 4
var. ecrustacea, Leight. 8
— viridans, F. W. 8
f. nigrita, Leight. 7
— enterochlora, Tayl. 7
— uliginosa (Schrad.). 3, 4, 7, 8, 11, 13
f. fuliginea (Ach.). 11
var. humosa, Leight. 4
— tessellata (Fckl.). 8
— spilota, Fr., f. ochracea (Ach.). 3
— mollis (Whlnb.). 3, 8
— coarctata (Sm.). f. elacista, Ach. 3, 4, 9, 1
f. involuta (Tayl.). 4, 7, 8
f. glebulosa (Sm.). 8, 13
f. ornata (Smmrf.). 8, 9
f. variolosa, Fw. 10
— tenebrosa (Flot.). 4, 8, 10

Lecidea panaeola, Ach. 10
— polycarpa, Flk. 4
— lapicida, Fr. 3, 8, 10
— rivulosa, Ach. 3
— fuscoatra, f. gibba, Wahl. 7–10
f. fumosa, Ach. 3, 7–9
f. grisella, Fck. 7, 8
f. deusta, Stenh. 7, 9, 11
— lactea (Flk.). 4
— Taylori (Salw.). 3, 8, 9
— contigua, Fr. 7, 9, 10
f. platicarpa, Fr. 7, 9, 10
f. leprosa, Leight. 7–9, 11, 12*
f. nobilis, Fr. 4, 8, 9, 11
f. flavicunda, Ach. 10
f. umbonata, Leight. 10
— consentiens, Nyl. 8, 9
— interjecta, Nyl. 3
— gelatinosa (Fckl.). 4
— jurana, Schraer. 3
— calcivora (Ehrh.). 3
— canescens (Dicks.). 3, 4, 11, 13
— insignis (Naeg.). 4
— stellulata, Tayl. 7
— disciformis, Fr. 3, 7
— myriocarpa (DC.)
f. chloropolia (Fr.). 8, 9, 11, 13
f. pinicola, Ach. 4, 7
f. quercicola, Rabh. 13
f. areolata, Leight. 8
f. leprosa, Leight. 7
f. ecrustacea, Leight. 4, 7–9
— atroalbella, Nyl. 7, 8
— alocizoides, Leight. 3
— leucoclinella, Nyl. 8
— occulta (Korb.). 8
— lutosa (Mont.). 3
— chalybeia, Borr. 4, 7, 11
— grossa (Pers.) 10
Templetoni, Tayl. 3
— caeruleo-nigricans (Light). 3
— subnigrata, Nyl. 10
— biformigera, Leight. 9
— Lightfootii (Sm.). 3
— denigrata, Fr. 2, 7, 8, 10, 13*
— tricolor (With.). 2, 3, 7, 10, 11, 13
— lutea (Dicks.). 3
— diluta (Pers.). 3, 4
— caradocensis, Leight. 4, 7, 8, 11
— incompta, Borr. 10
— alboatra (Hoffm.) 2–4, 9, 13
f. epipolia (Ach.). 3, 4
f. margaritacea (Ach.). 13
f. ambigua (Ach.). 3
— aromatica (Sm.). 3, 9*
— squamulosa, Deak. 3
— Turneri, Leight. 13
— gevica (Whlnb.). 9
— umbrina, Ach. 3, 4, 7, 11, 13*
f. compacta, Körb. 8, 9*, 11*
f. pelidniza, Nyl. 7
— milliaria, Fr. 8, 9
var. montana, Nyl. 8, 9
f. saxigena, Leight. 3, 7, 13
— subuletorum, Flk. 3, 4, 7, 9, 13
— premnea, Ach. 3, 7
f. saxicola, Leight. 3
— citrinella, Ach. 3

Lecidea carneola, Ach. 3*, 4, 7
— endoleuca, Nyl. 3, 6*, 7, 11
— rubella (Ehrh.). 4, 13
— muscorum (Sw.). 13
— effusa (Sm.). 6, 9*
var. fuscella, Fr. 9, 11
var. caesio-pruinosa, Mudd. 4, 7
var. inundata (Fries.). 10
— geographica (L.). 4, 7–9
f. contigua, Schaer. 8
f. sphaerica, Schaer. 4, 7, 8
f. urceolata, Schaer. 3, 9, 11
f. gerontica (Ach.). 9
— fecunda (Th. M. Fr.). 11
— petraea (Wulf.). 3, 4, 7–11, 13*
f. albicans, Fw. 3, 9*
f. cinerea, Fw. 8
f. fuscescens, Leight. 7, 8
f. coracina, Fw. 4, 7–11, 13*
f. dispersa, Leight. 3
— clavata, Fr. 8
— concentrica (Dav.). 9
f. typica, Leight. 9
f. impressula, Leight. 9
f. coarctata, Leight. 10*
— rimosa (Dicks.). 3, 10, 13*
— cupularis (Ehrh.). 3, 9, 13
— tantilla, Nyl. 3, 4, 7, 9, 13
— vitellinaria, Nyl. 7–9
— arenicola, Nyl. 4
Odontotrema longius, Nyl. 4, 7, 8
— majus, Leight. 2, 4*
Opegrapha herpetica, Ach., f. vera, Leight. 4, 7
f. rufescens, Pers.
f. arthonoidea, Schaer. 4
— atra, Pers. 4
f. denigrata (Ach.). 3
f. nigrata, Leight. 3, 4, 13
f. parallela, Leight. 7, 10
f. orthonoidea, Leight. 3, 9
f. ochocheila, Nyl. 11
— Turneri, Leight. 7, 8
— saxicola, Ach. 3, 7
var. Chevallieri, Leight. 3, 7*
— varia, Pers., f. pulicaris, Leight. 3, 4, 10
f. notha, Ach. 2–4, 7*, 8, 10
f. tigrina, Ach. 3, 7
— vulgata, Ach. 4
f. vulgata, Ach. 4, 7, 9
f. stenocarpa, Ach. 4
f. subsiderella, Nyl. 3
f. lithyrga, Ach. 7
— lyncea (Sm.). 3, 7
Platygrapha rimata (Fw.). 4
Stigmatidium crassum, Dub. 4
Arthonia lurida, Ach. 4, 9
— vinosa, Leight. 3
— melaspermella, Nyl. 4
— spadicea, Leight. 4
— proximella, Nyl. 9
— aspersa, Leight. 4
— punctiformis, Ach. 13
— astroidea, Ach. 4, 7
var. simulans, Leight. 4*, 9
— Swartziana, Ach. 2–4, 11
— cinnabarina (Wallr.) f. marginata, T. and B. 10
— pruinosa, Ach. 3, 4, 8, 10, 13
— varians (Dav.). 7–9

Graphis elegans (Sm.). 3, 7, 8*, 9
f. coacervata, Leight. 4, 7, 9
f. parallela, Schaer. 9
— scripta, Ach. f. minuta, Leight. 3
f. horizontalis, Leight. 10
f. divaricata, Leight. 10
var. serpentina, Ach. 3, 10
f. tremulans, Leight. 3, 4
f. radiata, Leight. 10
var. pulverulenta, Ach. 10
— dendritica (Ach.), f. Smithii, Leight. 3
— inusta, Ach., f. vera, Leight. 10
— sophistica, Nyl., f. flexuosa, Leight. 3
var. dendriticoides, Leight. 9
Mycoporum miserrimum, Nyl. 4, 7*, 9
Thelocarpon Laureri (Flot.). 4, 11, 13
— epithallinum, Leight. 4
— intermediellum, Nyl. 2, 8
Normandina laetevirens, Turn. and Borr. 3, 4, 8, 13
Endocarpon miniatum (L.). 3
var. complicatum (Sw.). Shropshire
— rufescens, Ach. 3, 9
f. lachneum, Ach. 3
— hepaticum, Ach. 10
Verrucaria margacea, Whlnb. 9
var. aethiobola, Whlnb. 7
— mutabilis, Borr. 4, 11
— laevata, Ach. 3, 10
— mauroides, Schaer. 3, 7, 13
— nigrescens (Pers.). 10, 11
— plumbea, Ach. 3, 8
— fuscella, Turn. 3
— glaucina (Ach.). 3, 8
— macrostoma (Duf.). 4, 13
Verrucaria viridula (Schrad.). 4, 8, 13
— murina, Leight. 3, 10
— rupestris, Schrad., var. muralis, Ach. 4, 7
— pulposa, Leight. 4
— calciseda, DC. 3
— mesotropa, Nyl. 3
— conoidea, Fries. 3, 9
— immersa, Leight. 3
— gemmata, Ach. 3, 7, 9, 10
— epidermidis, Ach. 2, 4
var. analepta, Ach. 2, 4
*f.* fallax, Nyl. 3, 7, 9
— cinerea (Pers.). 3, 7
— Laburni, Leight. 7, 13
— punctiformis, Ach. 4
— biformis, Borr. 4, 7, 9
— Salweii, Leight. 3
— arenicola, Leight. 4
— submiserrima, Nyl. 7
— chlorotica (Ach.). 9
var. codonoidea, Leight. 3, 7
f. carpinea, Schaer. 4, 9
— pyrenophora, Ach. 3
— nitida (Weig.). 3
— glabrata, Ach. 9
— albissima (Ach.). 4
— olivacea, Borr. 4, 7
— gothica (T. M. Fr.). 2, 4
— hymenogonia, Nyl. 8
— calcaricola (Mudd.). 8
— gemmifera, Tayl. 3, 7
var. erratica (Mass.). 8, 9
var. rimosicola, Leight. 11
Melanotheca gelatinosa (Chev.). 9, 13

## FUNGI

The following account of the Fungi of Shropshire is divided into two portions. The first is a list compiled by the late Mr. W. Phillips, F.L.S., of Shrewsbury, from his own publications *The Hymenomycetes of Shropshire* and *A Manual of British Discomycetes*, together with such additional records as were made by himself and the present writer up to the date of his compilation (1902). Several plants appear in this list the records of which are not now to be found, but doubtless the habitats were noted by Mr. Phillips on his coloured figures of the species, which are not now available owing to the dispersion of his library.

The list is left *in toto* as it stood, with the single exception that numerous additional district records have been added to plants which were already given on it.

The second portion is published as an addendum, and comprises records made by the writer, since Mr. Phillips's death, of species that are not given on the former list.

A few records are extracted from Purton's *Midland Flora* and from Mrs. Price's *Illustrations of Fungi*, but only in cases where there can be no possible doubt of the identity of the plant mentioned. All doubtful records are omitted, such as Mrs. Price's habitat for *Pholiota aurea*, Matt., since her accompanying figure does not appear to represent the species, but may possibly be a form of *Armillaria mellea*, Vahl. She also adds a note 'not uncommon,' which could scarcely apply to *Pholiota aurea*. On the other hand, her record of *Lepiota lenticularis*, Lasch. (which was omitted by Mr. Phillips), is, no doubt, quite correct: her figure of the species is a fairly good one, and the writer has found a nice group of this fungus in Willey Park for several years in succession.

A note is necessary on one species which appears in both lists. *Trametes rubescens*, A. & S., is given for several districts by Mr. Phillips, and *Trametes rubescens*, Fr., is also given by the writer in the addendum. It is impossible now to say what Mr. Phillips's fungus may have been, but, if correctly named, there ought to have been a further account of it, as the species is new to the British Flora. The writer possesses a postcard from the Rev. M. J. Berkeley to Mr. Phillips which may throw some little light on the matter. Mr. Berkeley says: 'Your fungus is undoubtedly *T. rubescens*, but I have always considered it the same with *Daedalea confragosa*.'

It is noteworthy that this Daedalea is not given by Mr. Phillips in his list, though it would not appear to be rare in the county. The record of *T. rubescens*, Fr., made by the writer, was listed after the fungus had been carefully considered by several good mycologists, and full details of the distinctive points between it and allied species are given in an account published in the *Transactions of the British Mycological Society*, 1906.

*Collybia plumipes*, Kalch., an addition to the British Flora, is also given by Mr. Phillips, but, unfortunately, no particulars of the fungus are now available.

It is to be regretted that Mr. Phillips did not include the Gasteromycetes in his list, as many of his records are undoubtedly lost. The arrangement followed in the lists is, by Mr. Phillips's express desire, the old Friesian system; in the second list the writer, for sake of convenience and in accordance with modern usage, raised the sub-genera of the Agarics to generic rank.

## HYMENOMYCETES [1]

### Order I—AGARICINI

#### Genus I—Agaricus

##### Series I—*LEUCOSPORI*

###### Sub-Genus Amanita

Agaricus phalloides, Fr. 2, 7, 8, 10–12
— vernus, Bull. 10
— mappa, Fr. 8, 10–12
— porphyrius, Fr. 12
— muscarius, Linn. 8, 11, 12
— pantherinus, Fr. 7, 12
— excelsus, Fr. 4
— rubescens, Fr. 4, 8, 10, 12
— vaginatus, Fr. 4, 8, 9, 11, 12
— spissus, Fr. 12
— strangulatus, Fr. 8, 12, 13

###### Sub-Genus Lepiota

Agaricus procerus, Scop. 4, 7, 8, 10, 12
— rachodes, Vitt. 4, 8, 10, 12
— excoriatus, Schaeff. 4, 11, 12
— gracilentus, Kromb. 8, 12
— acutesquamosus, Weinm. 7, 8, 12
— Friesii, Q. 10
— Badhami, Berk. 7, 12
— clypeolarius, Bull. 11
— metulaesporus, B. & Br. 11
— cristatus, A. & S. 4, 8, 10, 12
— naucinus, Fr. 12
— cepaestipes, Sow. 11
— carcharias, Pers. 11, 12
var. albus, Harzer. 12
— granulosus, Batsch. C
— amianthinus, Scop. 12
— seminudus, Fr. 8, 10, 12

###### Sub-Genus Armillaria

Agaricus melleus, Flo. Dan. C, 4, 10, 12
— mucidus, Schrad. 7

###### Sub-Genus Tricholoma

Agaricus sejunctus, Sow. 8, 11, 12
— portentosus, Fr. 4
— resplendens, Fr. 11, 12
— flavo-brunneus, Fr. 8, 11, 12
— albo-brunneus, Fr. 4, 11, 12
— ustalis, Fr. 11, 12
— rutilans, Schaeff. 2, 4, 7, 8, 11, 12

### Order I—AGARICINI (*continued*)

#### Genus I—Agaricus (*continued*)

##### Series I—*LEUCOSPORI* (continued)

###### Sub-Genus Tricholoma (*continued*)

Agaricus columbetta, Fr. 10, 12
— scalpturatus, Fr. 11
— vaccinus, Pers. 11, 12
— terreus, Schaeff. 4, 8, 11, 12
var. argyraceus, Kalch. 10
— saponaceus, Fr. 8, 11, 12
— cuneifolius, Fr. 12
— sulphureus, Bull. 7, 8, 12
— inamoenus, Fr. 10
— gambosus, Fr. 4, 8, 12
— acerbus, Bull. 8, 12
— personatus, Fr. C, 11, 12
— nudus, Bull. 4, 7, 8, 12
— grammopodius, Bull. 4, 8, 12
— sordidus, Fr. 12

###### Sub-Genus Clitocybe

Agaricus nebularis, Fr. 4, 12
— clavipes, Fr. 11, 12
— odorus, Bull. 7, 8, 11, 12
— cerussatus, Fr. 12, 13
— phyllophilus, Fr. 2, 4
— pithyophilus, Secr. 4
— candicans, Pers. 11
— dealbatus, Sow.
— fumosus, Pers. 10–12
— infundibuliformis. 4, 8, 12
— geotropus, Bull. 4–8, 10–12
— subinvolutus, Batsch. 4, 12
— flaccidus, Sow. 4, 10, 12
— cyathiformis, Fr. C
— ditopus, Fr. C, 11, 12
— fragrans, Sow. C, 12
— laccatus, Scop. C, 4, 10, 12

###### Sub-Genus Collybia

Agaricus radicatus, Relh. C, 4, 8, 10, 12
— platyphyllus, Fr. 11, 12
— fusipes, Bull. 8–12
— maculatus, A. & S. 7, 11, 12
— butyraceus, Bull. C, 10, 11
— velutipes, Curt. C, 4, 8, 12
— confluens, Pers. 2, 4, 8, 12, 13

[1] See also Addendum, p. 93.

ORDER I—AGARICINI (*continued*)

Genus I—AGARICUS (*continued*)

Series I—*LEUCOSPORI* (continued)

Sub-Genus Collybia (*continued*)

Agaricus conigenus, Pers. 11
— cirrhatus, Schum. 11
— tuberosus, Bull. 11, 12
— nitellinus, Fr. 4
— tenacellus, Pers. C
— plumipes, Kalch. 7
— dryophilus, Bull. C, 4
— aquosus, Bull. C, 4
— atratus, Fr. 4
— ambustus, Fr. 12

Sub-Genus Mycena

Agaricus pelianthinus, Fr. 10, 11, 13
— rosellus, Fr. 4, 11
— purus, Bull. C
— luteo-albus, Bolt. 11
— flavo-albus, Fr.
— rugosus, Fr. 11
— galericulatus, Scop. C, 4, 10
— polygrammus, Bull. C
— alcalinus, Fr. C
— tenuis, Bolt. 10
— acicula, Schaeff. 11, 12
— hoematopus, Pers. 11, 12
— sanguineolentus, A. & S. C, 8, 9, 12
— galopus, Schrad. C, 4, 8, 10, 12
— epipterygius, Scop. 7, 11, 12
— vulgaris, Pers. 11, 22
— stylobates, Pers. C
— tenerrimus, Berk.
— corticola, Schum. C

Sub-Genus Omphalia

Agaricus maurus, Fr. 4
— pyxidatus, Bull. C
— sphagnicola, Berk. 4, 11
— oniscus, Fr. 6, 7
— hepaticus, Batsch. 10
— muralis, Sow. C
— umbelliferus, Linn. 11
— viridis, Flo. Dan. 13
— rufulus, B. & Br. 11
— fibula, Bull. 11, 12
var. Swartzii, Fr. 12

Sub-Genus Pleurotus

Agaricus corticatus, Fr. 7, 12
— ulmarius, Bull. 2, 10, 12
— subpalmatus, Fr. 12
— circinatus, Fr. 8
— ostreatus, Jacq. 4, 11–13
— salignus, Pers. 7, 8, 10
— mitis, Pers. 12
— acerosus, Fr. 4, 10, 12
— Leightoni, Berk. 3
— applicatus, Batsch. 13

Series II—*HYPORHODII*

Sub-Genus Volvaria

Agaricus volvaceus, Bull. 11
— speciosus, Fr. 12
— parvulus, Weinm. 4, 8

ORDER I—AGARICINI (*continued*)

Genus I—AGARICUS (*continued*)

Series II—*HYPORHODII* (continued)

Sub-Genus Pluteus

Agaricus cervinus, Schaeff. 2, 4, 8, 11, 12

Sub-Genus Entoloma

Agaricus sinuatus, Fr. 8, 9
— Bloxami, Berk. 12
— Saundersii, Fr. 11
— jubatus, Fr. 8, 10, 12
— sericellus, Fr. 8, 12
— clypeatus, Linn. 4, 12
— nidorosus, Fr. 11, 12

Sub-Genus Clitopilus

Agaricus prunulus, Scop. 4, 8, 12
— carneoalbus, With. 4

Sub-Genus Leptonia

Agaricus serrulatus, Pers. 8, 11, 12
— chalybeus, Pers. 11

Sub-Genus Nolanea

Agaricus pascuus, Pers. C, 8, 12
— mammosus, Linn. 4
— pisciodorus, Ces. 4, 8

Sub-Genus Eccilia

Agaricus carneo-griseus, B. & Br. 4

Sub-Genus Claudopus

Agaricus variabilis, Pers. C

Series III—*DERMINI*

Sub-Genus Pholiota

Agaricus erebius, Fr. 4, 8, 9, 12
— togularis, Bull. 4, 13
— durus, Bolt. 7
— praecox, Pers. 4, 6, 8, 11, 12
— radicosus, Bull. 8, 11
— heteroclitus, Fr. 11
— aurivellus, Batsch. 7, 12
— squarrosus, Mull. 6, 9
— spectabilis, Fr. 4, 7, 10, 12
— adiposus, Fr. 7
— mutabilis, Schaeff. 7, 8, 10–12

Sub-Genus Inocybe

Agaricus calamistratus, Fr. 10
— plumosus, Bolt. 11
— haemactus, Berk. 10
— pyriodorus, Pers. 4, 8, 11
— incarnatus, Bres. 8, 10, 12
— scaber, Müll. 10, 11
— phaeocephalus, Bull. 11
— obscurus, Fr. 10, 12
— rimosus, Bull. 4, 7, 8, 12
— asterosporus, Quelet. 10
— geophyllus, Sow. 4, 10, 12

ORDER I—AGARICINI (*continued*)

Genus I—AGARICUS (*continued*)

Series III—*DERMINI* (continued)

Sub-Genus Hebeloma

Agaricus fastibilis, Fr. C
— glutinosus, Lindgr. 12
— versipellis, Fr. 2
— mesophaeus, Fr. 12
— sinapizans, Paul. 4
— crustuliniformis, Bull. 4, 10, 12

Sub-Genus Flammula

Agaricus gummosus, Lasch. 12
— carbonarius, Fr. 8, 11, 12
— alnicola, Fr. 11, 12
— hybridus, Fr. 11, 12
— sapineus, Fr. 11, 12
— inopus, Fr. 10, 11

Sub-Genus Naucoria

Agaricus semiorbicularis, Bull. C

Sub-Genus Galera

Agaricus tener, Schaeff. C
— hypnorum, Batsch. 12
— sphagnorum, Pers. 4, 11

Sub-Genus Tubaria

Agaricus furfuraceus, Bull. 4, 12

Sub-Genus Crepidotus

Agaricus alveolus, Lasch. 4, 12
— mollis, Schaeff. 4, 6, 10, 12
— Rubi, Berk.
— Phillipsii, B. & Br. 11

Series IV—*PRATELLI*

Sub-Genus Psalliota

Agaricus arvensis, Schaeff. C
— campestris, Linn. C
— sylvaticus, Schaeff. 4–7
var. hoemorrhoidarius, Kalch. 4, 7, 8, 11, 12
— echinatus, Roth. 8, 11

Sub-Genus Stropharia

Agaricus aeruginosus, Curt. 4
— inunctus, Fr. 12
— melaspermus, Bull. 8
— squamosus, Fr. 11, 12
— merdarius, Fr. 4
— stercorarius, Fr. C
— semiglobatus, Batsch. C, 11

Sub-Genus Hypholoma

Agaricus sublateritius, Schaeff. 4, 10, 12
— capnoides, Fr. 11
— fascicularis, Huds. 4, 10, 12
— lachrymabundus, Fr. 4
— velutinus, Pers. 12
— candolleanus, Fr. 4
— appendiculatus, Bull. C

Sub-Genus Psilocybe

Agaricus areolatus, Klotsch. 12
— semilanceatus, Fr. C
— spadiceus, Fr. C
— foenisecii, P. C

ORDER I—AGARICINI (*continued*)

Genus I—AGARICUS (*continued*)

Series IV—*PRATELLI* (continued)

Sub-Genus Psathyra

Agaricus spadiceo-griseus, Schaeff
— bifrons, Berk. 7
— semitinctus, Phill. 7, 10
— semivestitus, B. and Br.

Series V—*COPRINARII*

Sub-Genus Panaeolus

Panaeolus separatus, Linn. C, 12
— fimiputris, Fr. C
— campanulatus, Linn. C

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Genus COPRINUS

Coprinus comatus, Fr. 2, 4, 10, 12
— atramentarius, Fr. 4, 12
— extinctorius, Fr. C
— fimetarius, Fr. C
— niveus, Fr. C
— micaceus, Fr. C
— radians, Fr. 2, 10, 12
— lagopus, Fr. 10
— narcoticus, Fr. 2
— radiatus, Fr. C
— stercorarius, Fr. 10
— ephemerus, Fr. C
— plicatilis, Fr. 4, 9

Genus BOLBITIUS

Bolbitius vitellinus, Fr. 12
— Boltoni, Fr. 4
— fragilis, Fr. C
— titubans, Fr. C, 4

Genus CORTINARIUS

Sub-Genus Phlegmacium

Cortinarius varius, Fr. 12
— cyanopus, Scr. 7, 8
— largus, Fr. 11
— purpurascens, Fr. 11, 12
— turbinatus, Fr. 10

Sub-Genus Myxacium

Cortinarius collinitus, Fr. 7, 12
— livido-ochraceus, Fr. 4

Sub-Genus Inoloma

Cortinarius cyanites, Fr. 12
— bolaris, Fr. 10
— pholideus, Fr. 8, 10, 12
— arenatus, Fr. 4

Sub-Genus Dermocybe

Cortinarius ochroleucus, F. 12
— tabularis, Fr. 11
— caninus, Fr. 4, 11, 12
— cinnabarinus, Fr. 10, 12
— sanguineus, Fr. 4, 12
var. semisanguineus. 4
— cinnamomeus, Fr. 7, 11, 12

ORDER I—AGARICINI (*continued*)

Genus CORTINARIUS (*continued*)

Sub-Genus Telamonia

Cortinarius bulbosus, Fr. 4
— torvus, Fr. 4, 8, 11, 12
— impennis, Fr. 4
— hinnuleus, Fr. 11, 12
— evernius, Fr. 11
— armillatus, Fr. 11
— brunneus, Fr. 13
— rigidus, Fr. 10

Sub-Genus Hydrocybe

Cortinarius armeniacus, Fr. 10
— castaneus, Fr. 11, 12
— acutus, Fr. 11

Genus GOMPHIDIUS

Gomphidius glutinosus, Fr. 4, 8, 11, 12
var. roseus. 11
— viscidus, Fr. 8, 10, 12
— gracilis, B. 8, 12

Genus PAXILLUS

Paxillus giganteus, Sow. 2, 4, 12
— involutus, Fr. C, 4, 11
— atrotomentosus, Fr. 12
— panuoides, Fr. 11, 12
— paradoxus (Kalchbr.), Berk. 11

Genus HYGROPHORUS

Hygrophorus eburneus, Fr. 8, 10
— cossus, Sow. 10, 12
— olivaceo-albus, Fr. 4, 11, 12
— hypothejus, Fr. 4, 7, 10, 12
— pratensis, Fr. C, 4
— virgineus, Fr. C, 4
— niveus, Fr. C
— russo-coriaceus, B. and Br. 12
— fornicatus, Fr. 7
— distans, Berk. 10
— metapodius, Fr. 9
— ovinus, Fr. 9, 10
— subradiatus. 4
— Houghtoni, Berk. 10, 11
— Colemannianus, Blox. 12
— laetus, Fr. 10, 12
— foetens, Phill. 4
— coccineus, Fr. C
— miniatus, Fr. 4, 7, 8, 12
— puniceus, Fr. 8–10, 12
— obrusseus, Fr. 10, 13
— conicus, Fr. C, 4, 12
— calyptraeformis, Berk. 4, 11, 12
— chlorophanus, Fr. 4, 9, 12
— psittacinus, Fr. C, 4, 12
— unguinosus, Fr. 7, 12
— nitratus, Pers. 4, 9

Genus LACTARIUS

Lactarius scrobiculatus, Scop. 8, 12
— torminosus, Fr. 7, 8, 11, 12
— turpis, Fr. 4, 7, 11
— controversus, Fr. 4, 9, 12
— pubescens, Schrad. 4, 8, 12

ORDER I—AGARICINI (*continued*)

Genus LACTARIUS (*continued*)

Lactarius insulsus, Fr. 1, 8, 11, 12
— blennius, Fr. C, 4, 7, 9
— trivialis, Fr. 12
— uvidus, Fr. 8, 12
— pyrogalus, Fr. 4, 8, 10, 12
— pergamenus, Sow. 8, 10, 12
— piperatus, Fr. 4, 10–12
— vellereus, Fr. 8, 11, 12
— exsuccus, Sm. 11
— deliciosus, Fr. 8, 11, 12
— pallidus, Fr. 4, 11, 12
— quietus, Fr. 4, 11, 12
— theiogalus, Fr. 4, 12
var. chrysorheus, Fr. 4, 9, 10, 12
— rufus, Fr. C, 12
— helvus, Fr. 4, 12
— glyciosmus, Fr. 11, 12
— volemus, Fr. 12
— serifluus, Fr. 4, 12
— mitissimus, Fr. 11, 12
— subumbonatus, Lindgr. 4
— subdulcis, Fr. C, 12
— cimicarius, Batsch. 12
— camphoratus, Fr. 9, 11, 12

Genus RUSSULA

Russula nigricans, Fr. 2, 4, 10, 12
— adusta, Fr. 8, 12
— furcata, Fr. 8, 9
var. pictipes, Cke. 8
— sanguinea, Fr. 11
— drimeia, Cke. 12
— purpurea, Gill. 7
— virescens, Fr. 4, 8, 11
— lepida, Fr. 4, 7
— rubra, Fr.
— Linnaei, Fr. 10
— olivacea, Fr. 4
— cyanoxantha, Schaeff. 8, 9, 12
— heterophylla, Fr. C
— foetens, Fr. 12
— subfoetens, Sm. C
— fellea, Fr. 8, 12
— Queletii, Fr. 11, 12
— emetica, Fr. 4, 8, 12
— ochroleuca, Fr. C, 4, 8, 11, 12
— chloroides, Bresad. 8
— fragilis, Fr. 4, 11, 12
— veternosa, Fr. 12
— integra, Fr. 8, 12
— lutea, Fr. 7, 10

Genus CANTHARELLUS

Cantharellus cibarius, Fr. C, 4, 8, 12
— aurantiacus, Fr. 4, 8, 12
— carbonarius, A. & S. 8, 11
— Houghtoni, Phill. 11
— tubaeformis, Fr. 10–12
— lobatus, Fr. 8

Genus NYCTALIS

Nyctalis asterophora, Fr. 11
— parasitica, Fr. 12

### Order I—AGARICINI (*continued*)

#### Genus Marasmius

Marasmius peronatus, Fr. 7, 8, 12
— oreades, Fr. C
— erythropus, Fr. 10
— ramealis, Fr. 4, 8, 12
— rotula, Fr. 10, 12
— androsaceus, Fr. 6, 10, 12
— insititius, Fr. C
— epiphyllus, Fr. C

#### Genus Lentinus

Lentinus lepideus, Fr. 9, 12

#### Genus Panus

Panus conchatus, Fr. 9, 10, 12
— torulosus, Fr. 2, 4
— stypticus, Fr. 8, 12

#### Genus Schizophyllum

Schizophyllum commune, Fr. 11

#### Genus Lenzites

Lenzites betulina, Fr. C, 12

### Order II—POLYPOREI

#### Genus Boletus

Boletus luteus, Linn. 4, 8, 10, 12
— elegans, Schum. 4, 6, 8, 10, 12
— flavus, With. 4, 7
— granulatus, Linn. 8, 12
— bovinus, Linn. 10, 11
— badius, Fr. 10–12
— sanguineus, With. 9, 10
— piperatus, Bull. 10–13
— sulphureus, Fr. 4
— variegatus, Swartz. 7, 10, 12
— chrysenteron, Fr. C, 8, 12
— subtomentosus, Linn. C, 4, 8, 12
— radicans, Pers. 8
— pruinatus, Fr. 12
— rubinus, Smith. 12
— pachypus, Linn. 12
— edulis, Bull. 4, 8, 12
— satanus, Lenz. 4, 10, 12
— luridus, Fr. 2, 4, 8, 9, 11, 12
— laricinus, Berk. 2, 4, 8, 10, 12
— versipellis, Fr. 12
— scaber, Fr. C, 7, 8, 12
— felleus, Bull. 12
— cyanescens, Bull. 11
— castaneus, Bull. 4, 12

#### Genus Strobilomyces

Strobilomyces strobilaceus, Scop. 5, 9, 10

#### Genus Fistulina

Fistulina hepatica, Fr. 4, 7, 9, 11, 12

#### Genus Polyporus

Polyporus perennis, Fr. 10, 12
— squamosus, Fr. 4, 8, 12
— picipes, Fr. 11, 12
— lucidus, Fr. 4, 10, 12

### Order II—POLYPOREI (*continued*)

#### Genus Polyporus (*continued*)

Polyporus giganteus, Fr. 4, 7, 9, 10, 12
— sulfureus, Fr. 4, 6–8, 10–12
— salignus, Fr. 7
— pallescens, Fr. 4
— chioneus, Fr. 11
— caesius, Fr. 11, 12
— destructor, Pers. 11
— nidulans, Fr. 6, 10, 12
— fumosus, Fr. C
— adustus, Fr. C
— hispidus, Fr. 4, 6–8, 12
— cuticularis, Fr. 4
— dryadeus, Fr. 4, 7–9, 12
— betulinus, Fr. 4, 7, 12
— applanatus, Fr.
— fomentarius, Fr. C
— igniarius, Fr. 8, 11
— ribis, Schum. 7
— ulmarius, Fr. C, 10
— connatus, Fr. 8
— annosus, Fr. 10, 12
— hirsutus, Fr.
— velutinus, Fr. C
— versicolor, Fr. C
— abietinus, Fr. 11, 12
— ferrugineus, Fr. 7
— vulgaris, Fr. C
— vaporarius, Fr. C

#### Genus Trametes

Trametes rubescens, A. & S. 6, 7, 9
— suaveolens, Fr. 4, 6, 9, 11, 12

#### Genus Daedalea

Daedalea quercina, Pers. C, 10, 12

#### Genus Merulius

Merulius tremellosus, Schrad. 12
— corium, Fr. C.
— lachrymans, Fr. 2, 4

### Order III—HYDNEI

#### Genus Hydnum

Hydnum repandum, Linn. 8, 10, 12
— zonatum, Batsch. 9
— graveolens, Delast. 4
— auriscalpium, Linn. 4, 8, 9, 12
— alutaceum, Fr.
— niveum, Pers.
— aureum, Fr. 2
— diaphanum, Schum. 4

#### Genus Tremellodon

Tremellodon gelatinosum, Pers. 11, 12

### Order IV—THELEPHOREI

#### Genus Craterellus

Craterellus cornucopioides, Pers. 4, 10, 12
— sinuosus, Fr. 11
— crispus, Fr. 10, 11

ORDER IV—THELEPHOREI (*continued*)

Genus THELEPHORA

Thelephora Sowerbeyi, B. & Br. 11
— pallida, Fr. 11
— laciniata, Pers. 11, 12

Genus STEREUM

Stereum purpureum, Fr. 12
— hirsutum, Fr. C, 10
— spadiceum, Fr. 12
— sanguineolentum, Fr. C, 10, 12
— rubiginosum, Fr. C
— tabacinum, Lev. 11
— rugosum, Fr. C, 10, 12

Genus AURICULARIA

Auricularia mesenterica, Fr. 6, 10, 12

Genus CORTICIUM

Corticium evolvens, Fr. 2
— laeve, Fr. C
— sanguineum, Fr. 13
— coeruleum, Fr. 4, 10
— calceum, Fr. C
— quercinum, Pers. C
— cinereum, Fr. C
— incarnatum, Fr. C
— comedens, Fr. C
— typhae, Fckl. C
— puteanum, Schum. C
— sambuci, Pers. C

Genus HYPOCHNUS

Hypochnus olivaceus, Fr. 4

Genus SOLENIA

Solenia fasciculata, Pers. 4
— ochracea, Hoffm. C

Genus CYPHELLA

Cyphella griseo-pallida, Fr. 4
var. sambuci, Phill. 4
— muscigena, Fr. 10–12
— Curreyi, B. & Br.
— capula, Fr. C
— villosa (Pers.). C

ORDER V—CLAVARIEI

Genus SPARASSIS

Sparassis crispa, Fr. 11

Genus CLAVARIA

Clavaria botrytis, Pers. 10
— amethystina, Bull. 10
— fastigiata, Linn. 12

ORDER V—CLAVARIEI (*continued*)

Genus CLAVARIA (*continued*)

Clavaria muscoides, Linn. 12
— coralloides, Linn. 11
— cinerea, Bull. 3, 4, 10, 12
— cristata, Pers. 2
— rugosa, Bull. 10–12
— aurea, Schaeff. 10
— abietina, Pers. 4, 12
— stricta, Pers. 4
— fusiformis, Sow. C
— inaequalis, Flo. Dan. C
— vermicularis, Scop. 4, 13
— fragilis, Holms. 4
— stricta, Pers. 4
— pistillaris, Linn. 10
— contorta, Holmsk. 11
— ardenia, Sow. 10
— juncea, Fr. 2, 4, 10

Genus CALOCERA

Calocera viscosa, Fr. 4, 8, 12
— cornea, Fr. C

Genus TYPHULA

Typhula erythropus, Desm. 4, 11, 12
— Grevillei, Fr. 4, 11

Genus PISTILLARIA

Pistillaria quisquilliaris, Fr. C

ORDER VI—TREMELLINEI

Genus TREMELLA

Tremella foliacea, Pers. 10
— lutescens, Pers. 10, 11
— mesenterica, Retz. C, 11
— albida, Huds. C
— moriformis, Berk. 10
— sarcoides, With. 12

Genus EXIDIA

Exidia glandulosa, Fr. C

Genus HIRNEOLA

Hirneola auricula—Judae, Fr. 4, 5, 8, 10, 12

Genus NAEMATELIA

Naematelia virescens, Corda. 2

Genus DACRYMYCES

Dacrymyces deliquescens, Dub. C
— stillatus, Nees.
— chrysocomus, Tul. C

## DISCOMYCETES, Fries.

### Order I—HELVELLACEAE

#### Genus Morchella

Morchella esculenta (Linn.). 2, 6, 12
var. vulgaris. 2
— elata, F. 4, 8
— semilibera, DC. 5, 8–10, 12, 13

#### Genus Helvella

Helvella crispa, F. 2, 8, 10, 12
— lacunosa, Afz. 4, 8, 12
— elastica, Bull. 4, 9, 11
— ephippium, Lev. 4, 11

#### Genus Leotia

Leotia lubrica, Pers. 11, 12
— acicularis, Pers. 2, 6, 11

#### Genus Mitrula

Mitrula cucullata (Batsch). 11
— paludosa, F. 4, 9

#### Genus Spathularia

Spathularia flavida. 1, 6, 10, 12

#### Genus Leptoglossum

Leptoglossum olivaceum (Pers.). 10, 12

#### Genus Geoglossum

Geoglossum hirsutum, Pers. 4, 7, 10, 12
— difforme, F. 11
— glabrum, Pers. 10–12

#### Genus Rhizina

Rhizina undulata, F. 11, 12

### Order II—PEZIZAE

#### Genus Peziza

##### Series I—*NUDAE*

Peziza acetabulum, Linn. 2, 4, 10
— cupularis, Linn. 4, 11
— carbonaria, A & S. 7, 10, 11
— pleurota, Phill. 2
— onotica, Pers. 11
— leporina, Batsch. 2, 4, 11, 12
— apophysata, Cooke & Phil. 2
— aurantia, Oed. 2, 4, 10, 12
— badia, Pers. 4, 9, 12
— cochleata Bull. 7, 12
— ochracea, Boud. 11
— trachycarpa, Curr. 4, 5, 7, 9
— repanda, Wahl. 4, 7, 8, 11, 12
— reticulata, Grev. 2
— venosa, Pers. 4
— succosa, Berk. 9–11
— saniosa, Schrad. 11
— pustulata, Pers. 11
— vesiculosa, Bull. 2, 4, 8, 9, 12
— cerea, Sow. 10, 12

### Order II—PEZIZAE (*continued*)

#### Genus Peziza (*continued*)

##### Series I—*NUDAE* (continued)

Peziza lividula, Phill. 2
— purpurascens, Pers. 2
— tectoria, Cooke. 2, 4
— sepiatra, Cooke. 2, 4, 9
— subrepanda, Cooke & Phil. 2, 4, 10
— sterigmatizans, Phil. 4
— Crouani, Cooke. 4
— schizospora, Phill. 11
— violascens, Cooke. 4
— rutilans, Fr. 7, 11
— Phillipsii, Cooke. 2
— Macrocystis, Cooke. 11
— semi-immersa, Karst. 4
— ascoboloides, Bert. 2
— hepatica, Batsch. 11
— depressa, Phill. 2
— omphalodes, Bull. 4, 8, 10, 11
— domestica, Sow. 2
— subhirsuta, Schum. 7
— melaloma, A. & S. 8, 11

#### Genus Hymenoscypha

Hymenoscypha tuberosa (Bull). 4, 10, 12
— Candolleana (Lév.). 4
— filipes, Phill. 4
— Curreyana (Berk.). 4, 12
— amentacea (Balb.). 2, 8, 12
— luteo-virescens (Rob.). 11
— echinophila (Bull.). 9
— firma (Pers.). 8, 9, 11
— Aspegrenii (Fr.). 4
— bryophila (F.). 9
— Hedwigii, Phill. 4
— rhodoleuca (F.). 4
— petiolorum (Rob.). 2
— subtile (F.). 2
— strobilina (F.). 4
— virgultorum. 4
— fructigena (Bull.). 10, 12
— calyculus (Sow.). 4
— scutula (Pers.), var. fecata, Phill. 4, 12
var. Menthae, Phill. 4
— albida (Rob.). 4
— aurea (Pers.). 4
— cyathoidia (Bull.). 9, 11
var. solani (Pers.). 11
— Urticae (Pers.). 5, 9
— clavata (Pers.). 4
— amenti (Batsch.). 11
— renisporum (Ellis). 3

#### Genus Chlorosplenium

Chlorosplenium aeruginosum (Flo. Dan.). 10

#### Genus Belonidium

Belonidium culmicolum (Desm.). 4
— ventosum (Karst.). 4
— pullum, Phill. & Kei h. 4

ORDER II—PEZIZAE (*continued*)

Series I—*NUDAE* (continued)

Genus HELOTIUM

Helotium politum, Phill. 4
— citrinum (Hedw.). 5, 11
— pallescens (Pers.). 4
— fagineum (Pers.). 4
— sallicellum, F. 3, 4
— immutabile, Fckl. 4
— ilicis, Phill. 4
— claro-flavum (Grev.). 11
— pruinosum, Jerd. 3, 4
— herbarum (Pers.). 2, 11
— Humuli (Lasch.). 3
— conigenum (Pers.). 4

Genus MOLLISIA

Mollisia cinerea (Batsch). C
— benesuada (Tul.). 10
— fallax (Desm.). C
— urticola, Phill. 4
— arundinacea (DC.). 4
— elaphines (B. & Br.). 4
— atrata (Pers.). 4
— ulmariae (Lasch.). 4
— graminis (Desm.). 4
— sphaerioides (Desm.). 4
— palustris (Rob.). 4
— Digitalina, Phill. 4
— dilutella (Fries.). 7
— Mali (Rehm). 4
— effugiens (Rob.). 2

Series II—*VESTITAE*

Genus LACHNEA

Lachnea coccinea (Jacq.). 4, 8, 9, 12
— macropus (Pers.). 3, 11
— hemispherica (Wigg.). 2, 4, 11
— trechispora (B. & Br.). 4, 8, 11
— hirta (Schum.). 4
— umbrata (Fries.). 4
— scutellata (Linn.). 2, 4, 11, 12
— stercorea (Fr.). 8, 11
— theleboloides (A. & S.). 4
— Dalmeniensis (Cooke). 11

Genus LACHNELLA

Lachnella cerina (Pers.). 4, 9
— trichodea (Phill. & Plow.). 4, 9, 11
— clandestina (Bull.). 7
— calycina (Schum.), var. Trevelyani, Cooke. 4
— subtilissima (Cooke). 9
— nivea (Hedw.). 7
— aspidiicola (B. & Br.). 4
— acuum (A. & S.). 2
— virginea (Batsch). C, 11.
— crucifera, Phill. 7
— patula (Pers.). 11
— ciliaris (Schum.). 4
— acutipila (Karst), var. laetior. 4
— apala (B. & Br.). 4, 7
— Pteridis (A. & S.). 4
— corticalis (Pers.). 4, 7, 9
— Schumacheri (Fr.), var. plumbea (Grev.). 4
— escharodes (B. & Br.). 2

ORDER II—PEZIZAE (*continued*)

Series II—*VESTITAE* (continued)

Genus LACHNELLA (*continued*)

Lachnella sulphurea (Pers.). 2, 12
— sporotricha (Oude). 6
— hyalina (Pers.). 4, 11
— rufo-olivacea (A. & S.). 4, 9

Genus TAPESIA

Tapesia caesia (Pers.). 4
— Rosae (Pers.). 6
— aurelia (Pers.). 4, 10
— sanguinea (Pers.). 13
— fusca (Pers.). 4

Genus DESMAZIERELLA

Desmazierella acicola (Lib.). 8, 11

ORDER III—ASCOBOLEAE

Genus ASCOBOLUS

Ascobolus denudatus, Boud. 9, 11
— vinosus, Berk. 7, 11
— glaber, Pers. 4
— viridis, Curr. 7
— purpurascens, Pers. C.
— viridulus, Phill. & Plow. 7
— atrofuscus, Phill. & Plow. 11
— immersus, Pers. 9
— violascens, Boud. 11

Genus ASCOPHANUS

Ascophanus subfuscus, Boud. 4
— lacteus (Cooke & Phill.). 4
— microsporus (B. & Br.). 4
— granuliformis, Crouan. 4
— carneus (Pers.), var. cuniculi, Bond. 4
— ochraceus (Crouan). 4
— sexdecimsporus (Crouan). 9

ORDER IV—BULGARIEAE

Genus BULGARIA

Bulgaria inquinans, Fr. 7, 9–11

Genus VIBRISSEA

Vibrissea Guernisaci, Crouan. 4, 8
— turbinata, Phill. 4

Genus OMBROPHILA

Ombrophila purpurea (Fckl.). 7
— atrovirens (Pers.). 10, 11

Genus CALLORIA

Calloria xanthostigma (Fr.). 4
— Leightoni, Phill. 4
— luteo-rubella (Nyl). 4

ORDER V—DERMATEAE

Genus DERMATEA

Dermatea Houghtoni, Phill. 11
— rhabarbarina (Berk.). 2

ORDER V—DERMATEAE (*continued*)

Series II—*VESTITAE* (continued)

Genus CENANGIUM

Cenangium prunastri, Fr. 4
— ferruginosum, Fr. 2
— Rubi (Fr.). 9

Genus TYMPANIS

Tympanis amphibola (Mass.). 4
— laricina (Fckl.). 4

Genus CRUMENULA

Crumenula Callunigena, Karst. 6

Genus EPHELIS

Ephelis Rhinanthi, Phill. 7

ORDER VI—PATELLARIACEAE

Genus PATELLARIA

Patellaria ligniota, Fries. 4
— minutissima, Phill. 4
— proxima, B. & Br. 4
— Hyperici, Phill. 4
— connivens, (Fr.). 4
— atrata (Hedw.). 7

Genus HETEROSPHAERIA

Heterosphaeria patella (Jode). C

ORDER VII—STICTEAE

Genus PROPOLIS

Propolis pyri (B. & Br.). 4
— versicolor, Fr. C

ORDER VII—STICTEAE (*continued*)

Series II—*VESTITAE* (continued)

Genus SCHMITZOMIA

Schmitzomia annulata, Cooke & Phill. 3
— nivea (Pers.). 4

ORDER VIII—PHACIDIACEAE

Genus PHACIDIUM

Phacidium vaccinii, Fries. 4
— Ilicis, Lib. C
— Calthae, Philb. 2
— Pini (A. & S.). C
— dentatum Schmidt. C
— coronatum, Fr. C
— repandum, Fr. C

Genus TROCHILA

Trochila craterium, Fr. C
— Buxi, Capson. C
— Lauro-cerasi (Desm.). C

Genus STEGIA

Stegia Ilicis, Fr. C

ORDER IX—GYMNOASCEAE

Genus ASCOMYCES

Ascomyces Pruni (Tul.). 6
— deformans, Berk. 4
— bullatus (B. & Br.). 4
— aureus, Pers. 8, 9.

## HYMENOMYCETES

*ADDENDUM* [2]

AGARICINI

AGARICUS, Linn.

Amanita, Fr.

Amanita strobiliformis, Vitt. 8

Lepiota, Fr.

Lepiota clypeolaria. 12
var. pratensis, Bull. 8
— felina, Pers. 12
— leucothites, Vitt. 12
— cinnabarina, A. & S. 12
— lenticularis, Fr. 10, 12

Tricholoma, Fr.

Tricholoma equestre, L. 10
— imbricatum, Fr. 12
— immundum, Berk. 12
— carneum, Bull. 8, 12
— boreale, Fr. 12
— album, Schaeff. 8
— panaeolum, Fr. 12
— melaleucum, Pers. 8, 12

AGARICINI (*continued*)

AGARICUS, Linn. (*continued*)

Clitocybe, Fr.

Clitocybe amara, Fr. 12
— metachroa, Fr. 12
— zygophylla, C. & M. 12

Collybia, Fr.

Collybia longipes, Bull. 13
— vertiruga, Oke. 8
— stipitaria, Fr. 12
— funicularis, Karst. 12
— extuberans, Fr. 12
— rancida, Fr. 12
— inolens, Fr. 12

Mycena, Fr.

Mycena elegans, Fr. 8, 12
— rubro-marginata, Fr. 12
— lactea, Pers. 12
— leptocephala, Pers. 12
— ammoniaca, Fr. 12
— metata, Fr. 12

[2]By W. B. Allen.

AGARICINI (*continued*)

AGARICUS, Linn. (*continued*)

Mycena, Fr. (*continued*)

Mycena filopes, Bull. 12
— iris, Berk. 12
— rorida, Fr. 12
— amicta, Fr. 12
— leucogala, Cke. 8, 12
— pelliculosa, Fr. 12
— capillaris, Fr. 12

Omphalia, Fr.

Omphalia Postii, Fr. 12
— rustica, Fr. 12.
— grisea, Fr. 12

Pleurotus, Fr.

Pleurotus subpalmatus, Fr. 12
— lignatilis, Fr. 9
— septicus, Fr. 12

Pluteus, Fr.

Pluteus salicinus, Pers. 8, 12
— nanus, var. lutescens, Fr. 8, 12

Entoloma, Fr.

Entoloma lividum, Bull. 12
— ameides, B. & Br. 12
— costatum, Fr. 12
— sericeum, Fr. 8, 12
— griseocyaneum, Fr. 12

Clitopilus, Fr.

Clitopilus cretatus, B. & Br. 12
— vilis, Fr. 12

Leptonia, Fr.

Leptonia lampropoda, Fr. 8, 12
— incana, Fr. 8, 12

Eccilia, Fr.

Eccilia atropuncta, Pers. 8

Pholiota, Fr.

Pholiota marginata, Batsch. 12

Pluteolus, Fr.

Pluteolus aleuriatus, Fr. 8

Inocybe, Fr.

Inocybe hirsuta, Lasch. 12
— maritima, Fr. 12
— rhodiola, Bresad. 12
— perlata, Cke. 12
— Godeyi, Gillet. 12
— tricholoma, A. & S. 12

Naucoria, Fr.

Naucoria melinoides, Fr 12
— erinacea, Fr. 12

Tubaria, Fr.

Tubaria paludosa, Fr. 4
— stagnina, Fr. 4
— crobula, Fr. 12

AGARICINI (*continued*)

AGARICUS, Linn. (*continued*)

Crepidotus, Fr.

Crepidotus applanatus, Fr. 8

Psalliota, Fr.

Psalliota comptula, P. 8, 12.

Hypholoma, Fr.

Hypholoma dispersum, Fr. 13
— pyrotrichum, Holmsk. 12
— hydrophilum, Bull. 8, 12

Psilocybe, Fr.

Psilocybe subericaea, Fr. 12

Psathyra, Fr.

Psathyra conopilea, Fr. 12.
— fibrillosa, Pers. 12

Psathyrella, Fr.

Psathyrella gracilis, Fr. 12
— atomata, Fr. 12
— disseminata, Pers. 8, 12

Panaeolus, Fr.

Panaeolus sphinctrinus, Fr. 12
— phalaenarum, Fr. 8

Coprinus, Fr.

Coprinus sterquilinus, Fr. 12
— Hendersonii, Fr. 10
— picaceus, Fr. 8

CORTINARIUS, Fr.

Phlegmacium

Cortinarius triumphans, Fr. 12
— largus, Fr. 12
— subpurpurascens, Fr. 12
— infractus, Fr. 8
— multiformis, Fr. 12

Myxacium

Cortinarius talus, Fr. 8
— glaucopus, Fr. 12
— decolorans, Fr. 12
— mucifluus, Fr. 8, 12
— elatior, Fr. 8, 12
— pluvius, Fr. 12

Inoloma

Cortinarius albo-violaceus, Fr. 13
— callisteus, Fr. 12

Dermocybe

Cortinarius anomalus, Fr. 12
— lepidopus, Cke. 12
— uliginosus, B. 12

Telamonia

Cortinarius periscelis, Fr. 12
— hemitrichus, Fr. 12
— paleaceus, Fr. 12.

AGARICINI (*continued*)

CORTINARIUS, Fr. (*continued*)

Hydrocybe

Cortinarius leucopus, Bull. 12
— saturninus, Fr. 8
— decipiens, Fr. 12

HYGROPHORUS, Fr.

Hygrophorus arbustivus, Fr. 8, 12
— distans, B. 10
— spadiceus, Fr. 12
— nitratus, Pers. 12

LACTARIUS, Fr.

Lactarius fuliginosus, Fr. 12
— hysginus, Fr. 12
— spinosulus, Quél. 12

RUSSULA, Pers.

Russula densifolia, Gill. 12
— citrina, Gill. 12
— azurea, Bresad. 12
— aurata, Fr. 12
— consobrina, Fr. 12

MARASMIUS, Fr.

Marasmius urens, Fr. 8
— foetidus, Fr. 12
— amadelphus, Fr. 12

CANTHARELLUS, Adans.

Cantharellus infundibuliformis, Fr. 9, 11, 12

LENTINUS, Fr.

Lentinus cochleatus, Fr. 10

POLYPOREI

BOLETUS, Dill.

Boletus parasiticus, Bull. 12
— impolitus, Fr. 8, 12
— purpureus, Fr. 12

POLYPORUS, Fr.

Polyporus brumalis, Fr. 12
— rufescens, Fr. 12
— frondosus, Fr. 10
— varius, Fr. 12
— radiatus, Fr. 10, 12, 13
— rutilans, Fr. 12

POLYPOREI (*continued*)

POLYPORUS Fr. (*continued*)

Polyporus albus, Fr. 10
— abietinus, Fr. 11
— obducens, Pers. 8

TRAMETES, Fr.

Trametes Bulliardi, Fr. 12
— rubescens, Fr. 12
— mollis, Fr. 12

DAEDALEA, Pers.

Daedalea confragosa, Pers. 12

HYDNEI

HYDNUM, L.

Hydnum cyathiforme, Schaeff. 4
— alutaceum, Fr. 8
— ochraceum, Pers. 12
— udum, Fr. 12
— farinaceum, Pers. 12

IRPEX, Fr.

Irpex obliquus, Fr. 12

RADULUM, Fr.

Radulum orbiculare, Fr. 12

PHLEBIA, Fr.

Phlebia merismoides, Fr. 12
— radiata, Fr. 12

GRANDINIA, Fr.

Grandinia granulosa, Fr. 12
— mucida, Fr. 12

THELEPHOREI

THELEPHORA, Ehrh.

Thelephora anthocephala, Fr. 8, 12
— sebacea, Fr. 10

CLAVARIEI

CLAVARIA, L.

Clavaria ligula, Fr. 12

PISTILLARIA, Fr.

Pistillaria puberula, Berk. 12

## GASTEROMYCETES

### PHALLOIDEI

PHALLUS, L.

Phallus impudicus, L. 4, 8, 10–12
— caninus, Fr. 10, 12

### LYCOPERDEI

GEASTER, Mich.

Geaster Bryantii, Berk. 2
— limbatus, Fr. 7
— rufescens, Pers. 12
— fimbriatus, Fr. 8, 10

LYCOPERDON, Tourn.

Lycoperdon excipuliforme, Scop. 8, 12
— saccatum, Vahl. 10, 12
— velatum, Vitt. 12
— gemmatum, Batsch. 8, 12
— pyriforme, Schaeff. Common
— perlatum, Pers. 8, 12
— caelatum, Bull. 10, 12
— bovista, L. 2, 12
— plumbeum, Pers. Common

### LYCOPERDEI (*continued*)

SCLERODERMA, Pers.

Scleroderma vulgare, Fr. 10, 12
— verrucosa, Pers. 11, 12

### NIDULARIACEI

CYATHUS, Hall

Cyathus striatus, Hoffm. 10, 12
— vernicosus, DC. 12

CRUCIBULUM, Tul.

Crucibulum vulgare, Tul. 4, 9, 10, 12

SPHAEROBOLUS, Tode

Sphaerobolus stellatus, Tode. 12

THELEBOLUS, Tode

Thelebolus terrestris, A. & S. 12

## DISCOMYCETES

### HELVELLACEI

VERPA, Swartz

Verpa digitaliformis, Pers. 12

LEPTOGLOSSUM, Cke.

Leptoglossum viride, Pers. 12

GEOGLOSSUM, Pers.

Geoglossum glutinosum, Pers. 12

### DERMATEI

CENANGIUM, Fr.

Cenangium furfuraceum, Gill. 8

### TUBERACEI

HYDNOTRYA, B. & Br.

Hydnotrya Tulasnei, B. & Br. 11, 12

CHOIROMYCES, Vitt.

Choiromyces meandriformis, Vitt. 11, 12

## SAPROLEGNIACEAE

The members of this obscure order grow in water attached to decaying animal and vegetable matter, and to living animals, e.g. fishes, one species, *Saprolegnia ferox*, Gnuith., being concerned in what is known as the salmon-disease.

In appearance they resemble at first sight some of the pale, minute filamentous algae such as in the genus *Microspora*, and might indeed in some stages be mistaken under the microscope for algae, but their mode of fructification has determined their inclusion under the *Fungi*.

The following species were found in January, 1899, in a filter-tank at Welbatch in this county by Dr. Maurice Gepp, and determined by Mr. Antony Gepp, M.A., F.L.S. One was collected again by the writer in another locality in 1903.

With the exception of *Apodya lactea*, Cornu, which was originally described as an alga under *Leptomitus*, they form an addition to our British Flora. An account of them is given by Mr. A. Gepp in the *Journal of Botany*, 1899, pp. 198–201, and p. 338, pl.

Apodya lactea, Cornu
4. *Welbatch*, M. Gepp. In a road-side ditch at *Plealey*, Hamilton.

Achyla racemosa, Hildeb.
var. stelligera, Cornu
— spinosa, De Bary
Apodachlya pyrifera, Zopf.
} 4. *Welbatch*, M. Gepp

# BOTANY

## MYCETOZOA

The Mycetozoa were originally classified, under the name of Myxogastres or Myxomycetes, with the puff-balls and allied genera of the larger fungi ; hence they have always held a place in our fungus Flora and their study has been pursued by fungologists.

They are now proved to be quite distinct from the Basidiomycetes, not only by the fact that the spores are not seated on basids, as in the puff-balls, &c., but also by the constant sequence of three main stages in their life-history :— [1]

(1) The firm-walled spore gives birth to a swarm-cell.
(2) The swarm-cells coalesce to form a wandering plasmodium.
(3) The plasmodium concentrates to form either sporangia or sporophores.

They thus occupy that curious debatable land between the two great kingdoms of animal and vegetable life.

There are thirty-seven British genera, of which twenty-eight are represented by Shropshire specimens, and out of a total of 143 British species sixty-two are recorded for the county. This conveys no true idea of the distribution of the Mycetozoa over Shropshire, as the county is undoubtedly a rich hunting-ground, and the present list is compiled chiefly from the collections of the writer from a very limited area.

The nomenclature here followed is that given by Mr. A. Lister, F.R.S., in his *Guide to British Mycetozoa* (2nd ed.)

### MYCETOZOA, de Bary

#### 1. Ceratiomyxa, Schroet.

Ceratiomyxa mucida, Schroet.

#### 2. Badhamia, Berk.

Badhamia hyalina, Berk. 4
— utricularis, Berk. 12
— panicea, Rost. 12
— rubiginosa, R., var. globosa, List. 8

#### 3. Physarum, Pers.

Physarum viride, Pers. 11
— nutans, Pers. Common.
— compressum, A. & S. 12
— cinereum, Pers. 12
— bivalve, Pers. 8, 12
— diderma, Rost. 12
— contextum, Pers. 12

#### 4. Fuligo, Haller

Fuligo septica, Gmel. Common

#### 6. Craterium, Trent

Craterium pedunculatum, Trent. Common
— leucocephalum, Dit. 12

#### 7. Leocarpus, Link.

Leocarpus vernicosus, Link. Common

#### 8. Chondrioderma, Rost.

Chondrioderma spumarioides, Rost. 8
— Michelii, Rost. 12
— Trevelyani, Rost. 4
— radiatum, Rost. 8, 12
— floriforme, Rost. 7

### MYCETOZOA, de Bary (*continued*)

#### 10. Didymium, Schrad.

Didymium difforme, Duby. Common
— clavus, Rost. 8
— farinaceum, Schrad. 11, 12
— nigripes, Fr., var. xanthopus, Fr. 12
— effusum, Link. Common

#### 11. Spumaria, Pers.

Spumaria alba, DC. Common.

#### 13. Stemonitis, Gled.

Stemonitis fusca, Roth. 12
— flavogenita, Jahn. 12
— ferruginea, Ehr. 11

#### 14. Comatricha, Preuss.

Comatricha obtusata, Preuss. Common
— typhoides, Rost. 12

#### 15. Enerthenema, Bow.

Enerthenema elegans, Bow. 7

#### 16. Lamproderma, Rost.

Lamproderma irideum, Mass. Common
— violaceum, Rost. 12

#### 18. Brefeldia, Rost.

Brefeldia maxima, Rost. 12

#### 20. Cribraria, Pers.

Cribraria aurantiaca, Schrad. 12

#### 21. Dictydium, Schrad.

Dictydium umbilicatum, Schrad. 12

[1] A. Lister, *Brit. Mycetozoa*, 7.

MYCETOZOA, de Bary (*continued*)

23. Tubulina, Pers.

Tubulina fragiformis, Pers. 9, 11

25. Enteridium, Ehren.

Enteridium olivaceum, Ehren. 12

26. Reticularia, Bull.

Reticularia lycoperdon, Bull. Common

27. Trichia, Haller

Trichia affinis, de B. 4, 7, 8, 11, 12
— persimilis, Karst. 12
— varia, Pers. Common
— contorta, Rost. 7
— fallax, Pers. Common
— botrytis, Pers. 12

28. Oligonema, Rost.

Oligonema nitens, Rost. 2

29. Hemitrichia, Rost.

Hemitrichia rubiformis, List. 12
— clavata, Rost. 12

MYCETOZOA, de Bary (*continued*)

30. Arcyria, Hill

Arcyria ferruginea, Saut. 7, 12
— albida, Pers. 7, 12
— punicea, Pers. Common
— incarnata, Pers. 4, 9
— flava, Pers. 11, 12

32. Perichaena, Fr.

Perichaena depressa, Lib. 7
— populina, Fr. 8, 12
— variabilis, Rost. 12

33. Margarita, List

Margarita metallica, List. 12

34. Dianema, Rex

Dianema depressum, List. 12

35. Prototrichia, Rost

Prototrichia flagellifera, Rost. 2, 12

36. Lycogala, Mich.

Lycogala miniatum, Pers. Common

# ZOOLOGY

## MOLLUSCS

Judging from the paucity of published lists and their meagre details Shropshire is poor alike in mollusca and malacologists.

It is true that the soil of the district largely consists of sandstone, and is therefore unfavourable to molluscan life, but there are nevertheless limestone tracts in the south-western corner where snails might be expected to abound. It is from this district indeed and principally the neighbourhood of Church Stretton that the greater number of recorded species come,[1] but quite a score more of common forms should with further research be forthcoming.

So far, out of the 139 species known to inhabit the British Islands, only 73 appear to have been met with in Shropshire.

One early record cannot be accepted: *Vitrea lucida*, cited as common by Eyton, manifestly refers to *V. cellaria*, which was in his day confused with it.

Mr. Charles Fortey, the hon. sec. to the Ludlow Natural History Society, states that the following species are in the Society's Museum, having been received from Mr. De Boinville of Hereford, and supposed to have been found in Shropshire; but since they may have come from the Hereford side of the Ludlow district they have not been included in the following list. These are: *Vivipara contecta*, *Unio pictorum*, *U. tumidus*, *U. margaritifer*, and *Sphærium rivicola*.

### *A.* GASTROPODA

#### I. PULMONATA

##### *a.* STYLOMMATOPHORA

*Limax maximus*, Linn. Plas-yn-coed
— *flavus*, Linn.
*Agriolimax agrestis* (Linn.)
*Amalia gagates* (Drap.) Oswestry
*Vitrina pellucida* (Müll.)
*Vitrea crystallina* (Müll.)
— *alliaria* (Miller) The Wrekin; Church Stretton; Oswestry
— *glabra* (Brit. Auct.) Craigforda Wood; Hazler; Soudley, etc.
— *cellaria* (Müll.)
— *nitidula* (Drap.)
— *pura* (Ald.) Soudley Quarry
— *radiatula* (Ald.)
— *nitida* (Müll.)
— *fulva* (Müll.) Soudley; Edge Wood, etc.
*Arion ater* (Linn.)
— *hortensis*, Fér.
*Arion circumscriptus*, John.
— *subfuscus* (Drap.)
*Punctum pygmæum* (Drap.) Soudley; Ticklerton; Edge Wood, etc.
*Pyramidula rotundata* (Müll.)
*Helicella itala* (Linn.) Porthywain Quarries
— *caperata* (Mont.) Wenlock Edge
*Hygromia fusca* (Mont.) Near Church Stretton
— *hispida* (Linn.)
— *rufescens* (Penn.) Oswestry
*Acanthinula aculeata* (Müll.) Soudley Quarry; Eaton-under-Heywood
*Helicigona lapicida* (Linn.) Edge Wood
*Helix aspersa*, Müll.
— *nemoralis*, Linn.
— *hortensis*, Müll.
*Buliminus obscurus* (Müll.) Soudley Quarry; Edge Wood
*Cochlicopa lubrica* (Müll.) Ticklerton; Edge Wood, etc.

[1] R. A. Buddicom in *Church Stretton* (1900), i. 183–96.

*Azeca tridens* (Pult.) Ticklerton ; Edge Wood
*Pupa cylindracea* (Da C.) Stanway
*Sphyradium edentulum* (Drap.) Soudley
*Vertigo antivertigo* (Drap.) } Near Church
— *substriata* (Jeff.) } Stretton
— *pygmæa* (Drap.) Near Church Stretton
*Balea perversa* (Linn.) Llanforda Road, Oswestry
*Clausilia laminata* (Mont.) Wenlock Edge
— *bidentata* (Ström.) „ „
*Succinea putris* (Linn.)
— *elegans*, Risso. Morda

*b.* BASOMMATOPHORA

*Carychium minimum*, Müll. Soudley, etc.
*Ancylus fluviatilis*, Müll. Carding Mill Valley, etc.
*Velletia lacustris* (Linn.)
*Limnæa auricularia* (Linn.) Carding Mill Valley ; Ticklerton
*Limnæa pereger* (Müll.)
— *palustris* (Müll.)
— *truncatula* (Müll.)
— *stagnalis* (Linn.)
— *glabra* (Müll.) Oswestry ; near Shrewsbury ? (Ludlow Nat. Hist. Soc. Museum)
*Planorbis corneus* (Linn.) Near Shrewsbury ? (Ludlow Nat. Hist. Soc. Museum)
— *albus*, Müll.
— *nautileus* (Linn.)
— *marginatus* (Drap.)
— *vortex* (Linn.)
— *spirorbis*, Müll.
— *fontanus* (Lightf.)
*Physa fontinalis* (Linn.)
— *hypnorum* (Linn.) Oswestry

II. PROSOBRANCHIATA

*Bithynia tentaculata* (Linn.)
— *leachii* (Shepp.)
*Vivipara vivipara* (Linn.)
*Valvata piscinalis* (Müll.)

## *B.* PELECYPODA

*Dreissensia polymorpha* (Pall.) Canal at Uffington near Shrewsbury
*Anodonta cygnæa* (Linn.) Eaton-under-Heywood
*Sphærium corneum* (Linn.) Eaton-under-Heywood
*Sphærium lacustre* (Müll.)
*Pisidium amnicum* (Müll.) Eaton
— *pusillum* (Gmel.) Carding Mill Valley, Ticklerton
— *fontinale* (Drap.) Near Church Stretton
— *milium* (Held.)

## NOTE

The nomenclature above adopted is the same as in the earlier published volumes of this series of County Histories. The later and more correct naming will be found in the *List of British Non-marine Mollusca* issued by the Conchological Society.

# INSECTS

Shropshire, the largest of all the inland counties of England, presents a very productive field indeed to the investigations of the naturalist.

In the north and east, where it borders on Cheshire and Staffordshire respectively, the country is mainly either flat or merely undulating, the greater part of the land being under cultivation, intersected, however, here and there by woodland districts of no great extent, and in some few instances by rough unbroken areas, locally, at least, called mosses, not adapted to agriculture, and also by the presence of meres of some extent, such as Ellesmere, Bomere, Toneymere, and Berrington Pool. These unbroken areas or mosses, as well as the meres, retain their pristine characteristics no less than their original fauna.

The central, southern, and western districts, which last forms part of the eastern fringe of Wales, are of a much bolder and more varied order. Ranges of hills, which might almost in some few instances be dignified by the name of mountains, impart an altered aspect to the country, and at the same time serve as the watershed of innumerable small streams, which after a longer or shorter course flow into the Severn or the Wye, according as their trend is to the east or to the west.

It is not at all surprising to find, with such heterogeneous elements, that the geological formations are as varied as their surroundings. Among these are to be found important tracts where on the one hand limestone and on the other—perhaps in a less degree—sandy stretches form the natural characteristics.

The loftier ranges, too, such as those of the Clee Hills in the south-east, and the Longmynd in the central district, offer very large expanses of moorland, which equally with the limestone and sandy stretches foster each in turn their respective insect-life.

When to these are added the mosses and meres mentioned above, we are in possession of most of the elements which contribute severally to the formation of a strong insect-fauna.

Nor is this all, for owing to its geographical position many northern insects are found in Shropshire side by side with southern species ; they as it were overlap one another in this vicinity.

It is not only strange but greatly to be regretted that, with such natural advantages as these, few if any of the English counties have up to the present been so little worked for insects and are so devoid of entomologists as Shropshire.

From the best authorities on the subject it would seem that no work relating to the entire county, and embracing any of the various orders of insects, has appeared as yet. Even now, at the beginning of the twentieth century, when the writer was casting about in all directions for information as to the entire insect-fauna of the various districts of Shropshire, it has been found necessary, owing to the dearth of local collectors in entomology, to restrict the work to the orders of Neuroptera, Coleoptera, and Lepidoptera.

## NEUROPTERA

*Dragon Flies*

Extended search in entomological periodicals and other publications has revealed but a single record of an insect belonging to this order—the dragon fly *Calopteryx splendens*, from Wyre Forest. It is probable also that a still closer search would not greatly extend our knowledge. It is unlikely that Shropshire is worse off in this respect than any other county of similar geographical conditions. Consequently we see how much work entomologists have still to do before the whole of England even is worked out.

## COLEOPTERA

*Beetles*

Although the recorded list of beetles taken in the county is only a small one, yet the subject of the Coleoptera of Shropshire is very interesting. In the first place the Rev. W. Hope, the founder of the Hope Professorship at Oxford (now held by Professor Poulton) lived for some time at Netley, a township in the parish of Stapleton, and in the second place Charles Darwin, who began his natural history career as an ardent collector of beetles, spent his early years at Shrewsbury, and we gather from his letters that he had a great respect for Mr. Hope as a collector, and that he collected with him in the county and in North Wales. Unfortunately we have no record of Mr. Darwin's captures, but Mr. Hope's name frequently appears in Stephen's *Illustrations of British Insects* in connexion with Netley, Longnor, Ellesmere, Bomere, Longmont Forest, and one or two other Shropshire localities.

Mr. Hope's collection was a general one, and, apparently, foreign specimens occasionally became mixed with the British ones, and were occasionally recorded in error; this fact appears to have called forth the following scathing criticism in the *Entomologist's Weekly Intelligencer* of 11 July, 1857, p. 117, which has been kindly sent to me, with other papers bearing on the subject before us, by Mr. J. Harold Bailey :—

> Shropshire—that *terra incognita* to the mass of entomologists—we need scarcely call attention to, since it has been rendered immortal long ago through the captures of one of our most astounding collectors. The only question that arises is, what does *not* occur there? *Pachyta lamed* (inhabiting the summits of the Alps and Pyrenees), *Apate capucinus* (of Austria and southern Europe), *Lebia haemorrhoidalis* and *turcica* (so prized even on the continent), *Lixus ascanii*, *Lepyrus colon*, and other species innumerable, known nowhere else within the British Isles, all, all are 'common,' and, on one occasion, it has been stated (though we cannot vouch for this personally) that they were actually found ready pinned; so let the coleopterist who would turn his time to good account fly instantly to Shropshire, and hope for the best—*Spes nunquam fallit.*

This is somewhat hard on Mr. Hope; occasional mistakes may have occurred as above stated, but he was an accurate and careful collector on the whole, or he could never have won the approval of so strict and careful an observer as Charles Darwin, who speaks of him as his 'master in entomology' (*Naturalist's Voyage Round the World*, chap. 21), and of his great skill as a collector (*Life and Letters*, i, 178). As the subject is a very interesting one we may perhaps be allowed to quote one passage from Darwin's *Autobiography* (pp. 50, 51) on the collecting of coleoptera while he was an undergraduate at Cambridge, his home being then at Shrewsbury :—

> No pursuit at Cambridge was followed with nearly so much eagerness or gave me so much pleasure as collecting beetles. It was the mere passion for collecting, for I did not dissect them, and rarely compared their external characters with published descriptions, but got them named anyhow. I will give a proof of my zeal: one day on tearing off some old bark, I saw two rare beetles, and seized one in each hand; then I saw a third and new kind, which I could not bear to lose, so that I popped the one which I held in my right hand into my mouth. Alas! it ejected some intensely acrid fluid, which burnt my tongue so that I was forced to spit the beetle out, which was lost, as was the third one.
>
> I was very successful in collecting, and invented two new methods; I employed a labourer to scrape, during the winter, moss off the trees and place it in a large bag, and likewise to collect the rubbish at the bottom of the barges in which reeds are brought from the fens, and thus I got some very rare species. No poet ever felt more delighted at seeing his first poem published than I did at seeing in Stephens's *Illustrations of British Insects* the magic words, 'captured by C. Darwin, Esq.' I was introduced to entomology by my second cousin, W. Darwin Fox, a clever and most pleasant man, who was then at Christ's College, and with whom I became extremely intimate. Afterwards I became well acquainted, and went out collecting, with Albert Wray of Trinity, who in after years

became a well-known archaeologist ; also with H. Thompson of the same college, afterwards a leading agriculturist, chairman of a great railway, and member of Parliament. It seems therefore that a taste for collecting beetles is some indication of future success in life!

I am surprised what an indelible impression many of the beetles which I caught at Cambridge have left on my mind. I can remember the exact appearance of certain posts, the trees and banks where I made a good capture. The pretty *Panagaeus crux-major* was a treasure in those days, and here at Down I saw a beetle running across a walk, and on picking it up instantly perceived that it differed slightly from *P. crux-major* and it turned out to be *P. quadripunctatus*, which is only a variety or closely allied species, differing from it very slightly in outline. I had never seen in those days *Licinus* alive, which to an uneducated eye hardly differs from many of the black Carabidous beetles ; but my sons found here a specimen, and I instantly recognized that it was new to me, yet I had not looked at a British beetle for the last twenty years.

The county is probably very rich in Coleoptera ; this may be gathered from the work of Mr. Blatch at Church Stretton and of Mr. Blatch and Mr. Horner at Ludlow ; it will be noticed that these collectors captured a considerable number of the rarer small Staphylinidae (the list of Homalotae being particularly good). A considerable number of these were taken on the banks of the Onny near Ludlow. Mr. James Parker of Oxford informs me that this river flows into the Severn about two miles north-west of Ludlow, and at this point is two miles away from the county boundary ; it must not be confused with another river of the same name in Herefordshire which flows northward into the Lugg at Leominster. Church Stretton with its high hills, downs, and valleys appears to be an excellent locality, and will produce many more species if it is systematically worked. I am indebted to Mr. Willoughby Ellis, who now possesses Mr. Blatch's collection, for many of the records of the latter, and also for a list of his own captures, and I have also to thank Mr. J. Harold Bailey for a considerable number of records from Weston Rhyn and Pont Faen. Apart from localities mentioned by Stephens, we have lists from only four or five other districts, so that much remains to be done. The high ground of the Wrekin, the banks of the Severn, and the borders of the adjacent Welsh counties will probably be found to be very rich in Coleoptera ; at present the wooded parts of the county have scarcely been touched, and a week or two of systematic work with the beating and sweeping net would probably go far to double the present number of recorded species.

### CICINDELIDAE

Cicindela campestris, L.

### CARABIDAE

Cychrus rostratus, L.
Carabus catenulatus, Scop.
[— convexus, F. *Longmont Forest* (Hope) ; very doubtful as British]
— violaceus, L.
— arvensis, F.
Notiophilus substriatus, Wat.
Leistus spinibarbis, F. 'In prodigious numbers in the *Cave of Caractacus*, on the *Caradoc*, in 1825.' (Hope), Steph. *Ill.* i, 64
— rufescens, F.
Nebria brevicollis, F.
Elaphrus riparius, L.
— cupreus, Duft.
Loricera pilicornis, F.
Clivina fossor, L.
Miscodera arctica, Panz. *Church Stretton* (Blatch)
Panagaeus crux-major. *Longmont Forest*
Badister bipustulatus, F.
Bradycellus cognatus, Gyll.[1]
— similis, Dej. *Selattyn* (Bailey)
Harpalus ruficornis, F.

[1] Mr. Hope records Chlaenius holosericeus, F. Ellesmere Lake, Salop ; this is certainly an error.

### CARABIDAE (*cont.*)

Harpalus latus, L.
Stomis pumicatus, Panz.
Platyderus ruficollis, Marsh. *Church Stretton* and *Cleobury Mortimer*
Pterostichus versicolor, Sturm.
— vulgaris, L.
— nigrita, F.
— strenuus, Panz.
— diligens, Sturm.
— vitreus, Dej. *Church Stretton*
— madidus, F.
— striola, F.
Amara apricaria, Payk.
— patricia, Duft. *Church Stretton* (Blatch)
— tibialis, Payk.
— lunicollis, Schiödte.
— ovata, F.
— similata, Gyll.
Calathus flavipes, Fourc.
— mollis, Marsh.
— micropterus, Duft. *Church Stretton*
Taphria nivalis, Panz.
Pristonychus terricola, Herbst.
Anchomenus angusticollis, F. (junceus, Scop.)
— viduus, Panz.
var. moestus, Duft.
— piceus, L.
— gracilis, Gyll.
— scitulus, Dej.
— fuliginosus, Panz.

### CARABIDAE (*cont.*)

Olisthopus rotundatus, Payk.
Bembidium rufescens, Guér.
— biguttatum, F.
— aeneum, Germ.
— quadrimaculatum, L.
— lampros, Herbst.
— bipunctatum, L.
— decorum, Panz.
— monticola, Sturm. *Church Stretton*
— nitidulum, Marsh. (brunnipes, Sturm.)
— tibiale, Duft.
— atrocoeruleum, Steph.
— saxatile, Gyll.
— femoratum, Sturm.
— bruxellense, Wesm.
— littorale, Ol.
— flammulatum, Ol.
— varium, Ol.
— punctulatum, Drap. *Pont Faen* (Bailey)
Tachypus flavipes, L.
Perileptus areolatus. *Church Stretton ; Ludlow ;* banks of the *River Onny*, abundant (Blatch and Horner) ; banks of *River Ceiriog ; North Shropshire* (Bailey)
Trechus longicornis, Sturm. *Ludlow*, very rare (Blatch)
— minutus, F.
— obtusus, Er.

CARABIDAE (*cont.*)

Lebia crux-minor, L. 'One taken by the Rev. F. W. Hope upon sorrel, near *Netley* in August 1824,' (Steph. *Ill.* i, 27). This record is probably correct

[— haemorrhoidalis, F. 'I have seen one specimen only of this insect which was captured near *Netley*, Shropshire, on broom, by the Rev. F. W. Hope' (Steph. *Ill.* i, 28). There is probably a mistake as to this record]

— cyanocephala, L. *Netley* (Hope)

— chlorocephala, Hoff. *Church Stretton* (Blatch)

Demetrias atricapillus, L.

Dromius linearis, Ol.

— quadrimaculatus, L.

— quadrinotatus, Panz.

Metabletus foveola, Gyll.

HALIPLIDAE

Haliplus flavicollis, Sturm.

— variegatus, Sturm. *Pont Faen* (Bailey)

— lineatocollis, Marsh.

— Brychius elevatus, Panz. *Church Stretton*

DYTISCIDAE

Coelambus decoratus, Gyll.

— impressopunctatus, Schal. (picipes, F.)

Hydroporus granularis, L. *Netley* (Hope)

— flavipes, Ol. *Netley* (Hope)

— lepidus, Ol. *Church Stretton* (Blatch)

— rivalis, Gyll.

— septentrionalis, Gyll. *Ludlow; River Onny*, abundant, and *Church Stretton* (Blatch)

— davisi, Curt. *Church Stretton* (Blatch)

— 12-pustulatus, Ol.

— depressus, F.

— assimilis, Payk. (halensis, Steph. nec F.)

— dorsalis, F.

— rufifrons, Duft.

— marginatus, Duft. *North Shropshire*, in a small stream running into the *River Ceiriog* (Bailey)

— nigrita, F. *Church Stretton*

— tristis, Payk. *Church Stretton*

— umbrosus, Gyll.

— palustris, L.

— lineatus, F.

DYTISCIDAE (*cont.*)

Agabus guttatus, Payk.

— biguttatus, Ol. (nitidus, Steph.)

— paludosus, F.

— affinis, Payk.

— didymus, Ol.

— femoralis, Payk. *Longnor* (Hope)

— abbreviatus, F. (undulatus, Schr.); *Larden* (Hope)

— chalconotus, Panz.

Platambus maculatus, L.

Ilybius guttiger, Gyll.

Copelatus agilis, F.

Rhantus exoletus, Först.

Dytiscus circumcinctus, Ahr. *Netley* and *Bomere* (Hope)

— dimidiatus, Berg. *Ellesmere* and *Bomere* (Hope)

Hydaticus transversalis, Berg. *Netley* (Hope)

— seminiger, De. G. *Netley* (Hope)

GYRINIDAE

Gyrinus minutus, F.

Orectochilus villosus, Müll.

HYDROPHILIDAE

Philhydrus coarctatus, Gredl.

Laccobius sinuatus, Mots. (nigriceps Thoms.)

— alutaceus, Thoms.

Limnebius truncatellus, Thunb.

Chaetarthria seminulum, Payk.

Helophorus rugosus, Ol.

Hydrochus brevis, Herbst.

— elongatus, Schall.

— angustatus, Germ.

Henicocerus exsculptus, Germ. *Church Stretton*

Octhebius margipallens, Latr.

— bicolon, Germ.

— rufimarginatus, Steph.

— punctatus, Steph.

Hydraena riparia, Kug.

— nigrita, Germ.

Sphaeridium scarabaeoides, L.

— bipustulatum, F.

Cercyon obsoletus, Gyll.

— haemorrhoidalis, F.

— lateralis, Marsh.

— analis, Payk.

Cryptopleurum atomarium, F.

STAPHYLINIDAE

Aleochara fuscipes, Grav.

— bipunctata, Ol.

STAPHYLINIDAE (*cont.*)

Aleochara maculata, Bris. When I published my work on *British Coleoptera*, this species rested as British on a unique example taken by Mr. Gorham on the banks of the *Lyn, North Devon;* it has, however, been found at *Church Stretton* in some small numbers by Mr. W. G. Blatch and Mr. A. C. Horner

— moerens, Gyll.

— nitida, Grav.

Oxypoda spectabilis, Märk. Very rare; *Church Stretton* (Blatch)

— umbrata, Gyll.

— annularis, Sahlb. (pallidula *Brit. Cat.*)

Ocalea latipennis, Sharp. *Ludlow* and *Church Stretton*

— badia, Er.

Ilyobates nigricollis, Payk. *Church Stretton*

Homalota currax, Kr. *Church Stretton; Ludlow*

— insecta, Thoms. *Ludlow*

— pavens, Er. *Ludlow*

— cambrica, Woll. *Church Stretton; Ludlow*

— eximia, Sharp. *Ludlow*

— fragilis, Kr.

— longula, Heer.

— delicatula, Sharp. *Ludlow*

— subtilissima, Kr. *Ludlow*

— luteipes, Er. *Ludlow*

— londinensis, Sharp. *Ludlow*

— hygrotopora, Kr. *Ludlow*

— gregaria, Kr.

— oblongiuscula, Sharp. *Church Stretton* and *Ludlow*

— sylvicola, Fuss. *Church Stretton* and *Ludlow*

— crassicornis, Gyll. Mr. Blatch records this very rare species from *Church Stretton;* he has also taken it, I believe, on *Chat Moss*

— pagana, Er. *Church Stretton*

— monticola, Thoms. *Church Stretton*

— pilicornis, Thoms. *Church Stretton*

— debilis, Er. *Ludlow*

— fullaciosa, Sharp. *Ludlow*

— erenita, Rye. *Church Stretton*

— curtipennis, Sharp. *Church Stretton*; this Scotch species has also been taken by Mr. Blatch at *Sutton Park* near *Birmingham*

— decipiens, Sharp. *Church Stretton*

— exilis, Er. *Ludlow*

— pallens, Redt. *Ludlow*

— valida, Kr. *Church Stretton*

— boletobia, Thoms. *Church Stretton*

# INSECTS

## STAPHYLINIDAE (*cont.*)

Homalota sodalis, Er. *Ludlow*
— humeralis, Kr. *Church Stretton* and *Ludlow*
— gagatina, Baud. *Church Stretton*
— divisa, Märk. *Church Stretton*
— perexigua, Sharp. *Netley* (Blatch and Horner)
— oblita, Er. *Church Stretton*
— subtilis, Scriba. *Church Stretton*
— indubia, Sharp. *Church Stretton*
— mortuorum, Thoms. (?). *Church Stretton*
— sordidula, Er.
— marcida, Er.
— intermedia, Thoms.
— macrocera, Thoms.
— cadaverina, Bris.
— testudinea, Er.
— pilosiventris, Thoms. *Church Stretton*
Gnypeta caerulea, Sahlb. *Pont Faen* (Bailey)
Tachyusa constricta, Er
Autalia impressa, Ol.
Encephalus complicans, Westw. *Church Stretton*
Gyrophaena poweri, Crotch (puncticollis, Thoms.). *Church Stretton*
— affinis, Sahl.
Sipalia ruficollis, Er.
Bolitochara lucida, Grav.
— bella, Märk
— obliqua, Er.
Myllaena dubia, Grav.
— elongata, Matth.
— gracilis, Matth.
Gymnusa brevicollis, Payk. *Church Stretton*
— variegata, Kies. *Church Stretton*
Conosoma immaculatum, Steph. *Church Stretton*
Tachyporus obtusus, L.
— chrysomelinus, L.
— hypnorum, F.
— pusillus, Grav.
Tachinus humeralis, Grav.
— proximus, Kr. *Church Stretton*
— rufipes, De G.
— subterraneus, L.
Megacronus cingulatus. *Church Stretton*
— inclinans. *Church Stretton* and *Cleobury Mortimer*
Bolitobius lunulatus, L. (atricapillus, F.)
— trinotatus, Er.
— pygmaeus, F.
Mycetoporus lucidus, Er.
— punctus, Gyll. *Church Stretton*
— longulus, Mannh.
— clavicornis, Steph. *Shrewsbury*
Habrocerus capillaricornis, Grav.
Euryporus picipes, Payk. *Church Stretton*

## STAPHYLINIDAE (*cont.*)

Quedius lateralis, Grav.
— puncticollis, Thoms. *Netley* (Blatch and Horner)
— molochinus, Grav.
— fuliginosus, Grav.
— picipes, Mann.
— nigriceps, Kr.
— fumatus, Steph. (peltatus, Er.)
— maurorufus, Grav.
— umbrinus, Er.
— rufipes, Grav.
— semiaeneus, Steph.
— attenuatus, Gyll.
— scintillans, Grav. *Church Stretton*
— auricomus, Kies.
Ocypus similis, F.
Philonthus splendens, F.
— intermedius, Boisd.
— addendus, Sharp. *Church Stretton*
— marginatus, F.
— sanguinolentus, Grav. *Weston Rhyn*
— bipustulatus, Panz. (cruentatus Gmel.) *Weston Rhyn*
— discoideus, Grav.
— fulvipes, F. *Church Stretton*, *Ludlow*, *Pont Faen*
— trossulus, Nord.
— nigritulus, Grav.
— puella, Nord. *Pont Faen*
Actobius signaticornis, Rey. *Ludlow*
— prolixus, Er. *Church Stretton*; very common near *Ludlow* (Blatch)
Xantholinus glabratus, Grav.
Leptacinus batychrus, Gyll.
Lathrobium angusticolle, Lac. *Ludlow*, one specimen
Medon brunneus, Er. *Ludlow*
— ripicola, Kr. *Ludlow*
Scopaeus erichsoni. *Ludlow*
Stilicus affinis, Er.
Dianous caerulescens, Gyll.
Stenus juno, F.
— atratulus, Er.
— guynemeri, Duv.
— tempestivus, Er.
— flavipes, Er. (erichsoni, Rye)
— similis, Herbst.
— tarsalis, Ljun.
Oxytelus inustus, Grav.
— fairmairei Pand. *Netley* (Blatch and Horner)
Haploderus coelatus, Grav.
Ancyrophorus omalinus. *Ludlow*
Thinobius linearis, Kr. *Ludlow*
— longipennis Heer. *Ludlow*, abundant (Blatch)
Geodromicus nigrita, Müll. *Church Stretton*
Lesteva punctata, Er.
Deliphrum tectum, Payk. *Church Stretton* and *Pont Faen*
Lathrimaeum atrocephalum, Heer.

## STAPHYLINIDAE (*cont.*)

Lathrimaeum unicolor, Marsh.
Homalium exiguum, Gyll.
Hapalaraea pygmaea, Payk.
Acrulia inflata, Gyll. Four specimens of this very rare species were taken by Mr. Blatch under loose bark of an elm tree in a wet place near *Ludlow*
Anthobium torquatum, Marsh.
Proteinus ovalis, Steph. (brevicollis, Er.)
— atomarius, Er.
Megarthrus hemipterus, Ill.

## LEPTINIDAE

Leptinus testaceus, Müll. *Church Stretton*

## SILPHIDAE

Agathidium lævigatum, Er.
— atrum, Payk.
— seminulum, L.
— globosum, Muls. *Church Stretton*
— nigrinum, Sturm.; var. staphylaeum, Gyll. *Weston Rhyn*
Amphicyllis globus, F. *Church Stretton*
Leiodes humeralis, F. *Netley*
Necrophorus humator, F.
— vespillo, L.
Necrodes littoralis, L. *Netley*
Silpha thoracica, L.
— reticulata, F. *Netley*
— nigrita, Creutz.
— atrata, L.
var. brunnea, Herbst.
— quadripunctata, L.
Choleva angustata, F.
— intermedia, Kr.
— spadicea, Sturm. *Church Stretton*
— agilis, Ill.
— fusca, Panz.
— coracina, Kell. *Church Stretton*
— grandicollis, Er. ?
— kirbyi, Spence
— chrysomeloides, Panz.
— wilkini, Spence
— anisotomoides, Spence
Colon zebei, Kr. *Church Stretton*
— dentipes, Sahl. *Church Stretton*

## SCYDMAENIDAE

Neuraphes elongatulus, Müll. *Church Stretton*
— sparshalli, Denny; var. minutus, Chaud. *Netley* (Blatch and Horner)
Scydmænus scutellaris, Müll.

### PSELAPHIDAE

Pselaphus heisei, Herbst.
Tychus niger, Payk.
Bythinus puncticollis, Denny
— validus, Aubé. *Church Stretton*
— bulbifer, Reich.
— curtisi, Leach. *Netley* (Stephens)
Bryaxis haematica, Reich.
Batrisus venustus, Reich. *Shrewsbury*
Trichonyx märkeli, Aubé. *Ludlow* (Blatch)

### TRICHOPTERYGIDAE

Trichopteryx thoracica, Waltl.

### PHALACRIDÆ

Phalacrus coruscus, Payk.
Olibrus aeneus, F.
Stilbus testaceus, Panz. (consimilis, Marsh)

### COCCINELLIDAE

Anisosticta, 19-punctata, L. *Cleobury Mortimer*, on water plants (Ellis)
Halyzia 14-guttata, L.
— 22-punctata, L.
Scymnus haemorrhoidalis, Herbst.
Rhizobius litura, F.
Coccidula rufa, Herbst.

### ENDOMYCHIDAE

Mycetaea hirta, Marsh.

### EROTYLIDAE

Dacne rufifrons, F.

### COLYDIIDAE

Cerylon histeroides, F.

### HISTERIDAE

Hister succicola, Thoms.
— neglectus, Germ.
— carbonarius, Ill.
— stercorarius, Hoff. *Netley*
— bissexstriatus, F. *Netley*
— 12-striatus, Sch.
— bimaculatus, L.
Myrmetes picens, Payk. *Netley*
Saprinus nitidulus, Payk.
— aeneus, F.

### MICROPEPLIDAE

Micropeplus porcatus, F.
— staphylinoides, Marsh.

### NITIDULIDAE

Cercus pedicularius, L.
— bipustulatus, Payk.
— rufilabris, Latr.
Brachypterus urticae, F.
Meligethes viridescens, F.
— flavipes, Sturm.
— erythropus, Gyll.
Epuraea aestiva, L.
— obsoleta, F.
— pusilla, Herbst.
Micrurula melanocephala, Marsh.
Omosiphora limbata, F.
Nitidula bipustulata, L.
Omosita depressa, L.
Soronia punctatissima, Ill.
Amphotis marginata, F. *Netley*
Pocadius ferrugineus, F.
Cryptarcha strigata, F.
Rhizophagus depressus, F.
— cribratus, Gyll. *Church Stretton*
— perforatus, Er.

### MONOTOMIDAE

Monotoma picipes, Payk.

### LATHRIDIIDAE

Coninomus nodifer, Westw.
Cartodere ruficollis, Marsh
Corticaria elongata, Gyll.
Melanophthalma gibbosa, Herbst.
— fuscula, Gyll.

### CUCUJIDAE

Laemophloeus ferrugineus, Steph.

### CRYPTOPHAGIDAE

Antherophagus pallens, Ol. *Weston Rhyn*
Cryptophagus lycoperdi, Herbst.
— scanicus, L.
Atomaria fuscipes, Gyll.
— atricapilla, Steph.

### SCAPHIDIIDAE

Scaphisoma agaricinum, L.
— boleti, Panz.
Scaphidium quadrimaculatum, Ol.

### MYCETOPHAGIDAE

Typhaea fumata, L.
Diphyllus lunatus, F.
Mycetophagus quadripustulatus, L.
— piceus, F. *Shrewsbury*
— atomarius, F. *Netley*
— multipunctatus, Herbst. *Netley*
Triphyllus punctatus, F.
— suturalis, F.

### DERMESTIDAE

Dermestes murinus, L.
Attagenus pellio, L.
Anthrenus claviger, Er.

### BYRRHIDAE

Byrrhus pilula, L.
— fasciatus, F.
Simplocaria semistriata, F.

### PARNIDAE

Limnius tuberculatus, Müll.
Elmis aeneus, Müll. *Netley*
— volkmari, Panz. *Pont Faen*
— parallelopipedus, Müll. *Church Stretton*
Parnus prolifericornis, F.
— algiricus, Lucas (striatellus, Fairm.), *Church Stretton*

### HETEROCERIDAE

Heterocerus marginatus, F.

### LUCANIDAE

Lucanus cervus, L. I know of no modern record of this beetle in the county, but in the *Historia Insectorum* by John Ray (1710), p. 75, there occurs the following entry: 'Scarabaeus maximus platyceros, Taurus nonnullis, aliis Cervus volans. The Stag Fly. Item prope Wreken in agro Salopiensi.' This record evidently refers to the Stag Beetle, which is rare in the Midlands, but has been found as far north as Derbyshire and Northamptonshire. It is, of course, common further south, especially in Kent and Surrey
Dorcus parallelopipedus, L.
Sinodendron cylindricum, L.

### SCARABAEIDAE

Onthophagus ovatus, L.
Aphodius subterraneus, L.
— fossor, L.
— haemorrhoidalis, L.
— fimetarius, L.
— ater, De G.
— constans, Duft.
— sticticus, Panz.
— pusillus, Herbst.
— merdarius, F.
— prodromus, Brahm.
— punctato-sulcatus, Sturm.
— obliteratus, Panz.

# INSECTS

## SCARABAEIDAE (*cont.*)

Aphodius rufipes, L.
— luridus, F.
— depressus, Kug.
Geotrupes typhaeus, L.
— sylvaticus, Panz.
Phyllopertha horticola, L.

## BUPRESTIDAE

Agrilus viridis, L. *Netley*

## ELATERIDAE

Throscus dermestoides, L.
Cryptohypnus riparius, F.
— quadripustulatus, F,
— dermestoides, Herbst.
var. quadriguttatus, Lap.
Limonius minutus, L.
Athous niger, L.
— haemorrhoidalis, F.
— longicollis, Ol.
Corymbites cupreus, F.
— quercus, Gyll.
var. ochropterus, Steph.
— holosericeus, Ol.
— aeneus, L.
Agriotes sputator, L.
— lineatus, L.
— obscurus, L.

## DASCILLIDAE

Dascillus cervinus, L.
Helodes minuta, L.
— marginata, F. *Pont Faen*
Microcara livida, F.
Hydrocyphon deflexicollis, Müll. *Church Stretton*

## LAMPYRIDAE

Lampyris noctiluca, L. *Netley*. This insect (the common glow-worm) appears to be very local and scarce in the county, as at present recorded

## TELEPHORIDAE

Podabrus alpinus, Payk. *Weston Rhyn*
Telephorus fuscus, L.
— pellucidus, F.
— obscurus, L. *Church Stretton*
— haemorrhoidalis, F.
— flavilabris, Fall.
Rhagonycha fulva, Scop.
— testacea, Ol.
Malthinus fasciatus, Ol.
— punctatus, Fourc.

## MELYRIDAE

Malachius bipustulatus, L.
Dasytes aerosus, Kies.

## CISSIDAE

Cis boleti, Scop.
— bidentatus, Ol.
— fuscatus, Mell.
Octotemnus glabriculus, Gyll.

## PTINIDAE

Priobium castaneum, F.
Anobium domesticum, Fourc.
Ernobius mollis, L.
Dryophilus pusillus, Gyll.
Hedobia imperialis, L.

## PRIONIDAE

Prionus coriarius, L. *Netley*

## CERAMBYCIDAE

Clytus arietis, L.
Rhagium inquisitor, L.
— indagator, Gyll. *Shropshire* (Stephens)
Toxotus meridianus, L.
Grammoptera ruficornis, F.

## LAMIIDAE

Leiopus nebulosus, L.
Pogonochaerus bidentatus, Thoms. (hispidus, Laich). *Weston Rhyn*
— dentatus, Fourc. (pilosus, F.). *Weston Rhyn*

## CHRYSOMELIDAE

Lema lichenis, Voet.
— melanopa, L.
Cryptocephalus fulvus, Goeze (minutus, F.)
— labiatus, L.
Chrysomela varians, F. *Church Stretton*
Phytodecta olivacea, Först. *Church Stretton*
— pallida, L.
Phyllodecta vitellinae, L.
Hydrothassa aucta, F.
— marginella, L.
Prasocuris junci, Brahm (beccabungae, Ill.)
Lochmaea suturalis, Thoms.
Longitarsus melanocephalus, Gyll.
— pusillus, Gyll.
— gracilis, Kuts.
Phyllotreta cruciferae, Goeze (obscurella, Ill.)
— nemorum, L.
— ochripes, Curt. *Weston Rhyn*
— exclamationis, Thunb. (brassicae, F.) *Weston Rhyn*
Aphthona nonstriata, Goeze (coerulea, Payk.)
— atro-coerulea, Steph. (cyanella, Redt.)

## CHRYSOMELIDAE (*cont.*)

Batophila rubi, Payk.
— aerata, Marsh
Sphaeroderma testaceum, F.
— cardui, Gyll.
Crepidodera rufipes, L.
— aurata, Marsh
Chaetocnema hortensis, Fourc.
Plectroscelis concinna, Marsh
Psylliodes napi, Koch
— affinis, Payk.
Cassida viridis, L.

## TENEBRIONIDAE

Heledona agaricola, Herbst. *Netley*
Scapidema aeneum, Payk. *Netley*

## CISTELIDAE

Cistela luperus, Herbst.
var. ferruginea, F. *Weston Rhyn*
— murina, L.

## MELANDRYIDAE

Tetratoma fungorum, F.
Abdera quadrifasciata, Curt. *Shropshire* (Stephens)

## PYTHIDAE

Rhinosimus planirostris, F.

## PYROCHROIDAE

Pyrochrea serraticornis, Scop. (rubens, F.)

## MORDELLIDAE

Anaspis fasciata, Först. (geoffroyi, Müll.)

## RHIPIDOPHORIDAE

Metaecus paradoxus, Gyll. *Netley*

## ANTHICIDAE

Anthicus floralis, L.

## MELOÏDAE

Meloë violaceus, Marsh. *Weston Rhyn*. April, 1895, in profusion (Bailey)

CURCULIONIDAE

Rhynchites uncinatus, Thoms.
Apion subulatum, Kirby
— carduorum, Kirby
— onopordi, Kirby
— pallipes, Kirby. *Weston Rhyn*
— seniculum, Kirby
— rufirostre, F.
— apricans, Herbst. (fagi, L.)
— trifolii, L
— ebeninum, Kirby
— punctigerum, Payk.
— virens, Herbst.
— ervi, Kirby
— violaceum, Kirby
— hydrolapathi, Kirby. *Weston Rhyn*
— humile, Germ.
Tropiphorus tomentosus, Marsh. (mercurialis, *Brit. Cat.*). *Weston Rhyn*
Barynotus obscurus, F.
— elevatus, Marsh. maerens (auct. nec F.). *Weston Rhyn*
Exomias araneiformis, Schrank. (brunnipes, Ol.)
Brachysomus echinatus, Boisd. *Church Stretton*
Sciaphilus muricatus, F.

CURCULIONIDAE (*cont.*)

Phyllobius calcaratus, F.
— maculicornis, Germ.
— oblongus, L.
— viridiaeris, Laich. (uniformis, Marsh)
Caenopsis waltoni, Boh. *Bridgnorth*
Otiorrhynchus scabrosus, Marsh.
— picipes, F.
— muscorum, Bris.
Sitones cambricus, Steph. *Church Stretton* and *Weston Rhyn*
— lineatus, L.
Liosoma ovatulum, Clairv.
— oblongulum, Boh. *Weston Rhyn* and *Church Stretton*
Alophus triguttatus, F.
Hypera punctata, F.
— variabilis, Herbst.
— polygoni, L.
— nigrirostris, F.
Grypidius equiseti, F.
Thryogenes scirrhosus, Gyll. *Church Stretton*
Dorytomus maculatus, Marsh
— tortrix, L.
Mecinus pyraster, Herbst.
Anthonomus rubi, Herbst.

CURCULIONIDAE (*cont.*)

Orchestes fagi, L.
Rhamphus flavicornis, Clairv.
Miccotrogus picirostris, F.
Cionus pulchellus, Herbst.
Orobitis cyaneus, L. *Weston Rhyn*
Caeliodes quercus, F.
— quadrimaculatus, L.
Ceuthorrhynchus erysimi, F.
— contractus, Marsh
— ericae, Gyll.
— trimaculatus, F.
— asperifoliarum, Gyll.
— pollinarius, Först.
Phytobius quadrituberculatus, Fahr.
Poophagus sisymbrii, F.

CALANDRIDAE

Calandra granaria, L.

SCOLYTIDAE

Hylesinus oleiperda, F.
— fraxini, F.
Trypodendron domesticum, L.

## LEPIDOPTERA

*Butterflies and Moths*

From the following list it will be seen that Shropshire, from an entomological point of view, compares very favourably with other counties. Taking the Rhopalocera for instance, all the British representatives of the Vanessidae are to be found. The same is true of the genus *Argynnis* with the sole exception of *A. lathonia*, which may be considered as merely a casual immigrant. Turning to the Sphinges, few districts, if indeed any, lying so far to the north can furnish so goodly an array of indigenous species. The Bombyces are also well represented; in this group the members of the genus *Cerura* as well as of the genus *Hepialus* occur in their entirety, while other genera are almost complete. Whole genera again among the Noctuae are of frequent occurrence, such for example as *Mamestra*, *Triphaena*, *Taeniocampa*, *Xanthia*, *Anchocelis*, &c.; only a very few species, moreover, are wanting to complete *Caradrina*, *Noctua*, *Orthosia* and many more. The varied topography of the county also tends greatly to produce variation; some fine aberrations of the Pieridae, Argynnidae, Vanessidae, and Lycaenidae among the Rhopalocera having been taken. In the group of the Bombyces, the Chelonidae appear especially subject to its influence, as exemplified by the varieties of *Nemeophila plantaginis* and *Arctia caja*. *Saturnia pavonia*, too, exhibits many and varied forms, produced doubtless by its local surroundings. *Bombyx rubi* no less varies greatly from a like cause.

The Noctuae and Geometrae in turn are also subject to departure from the type, and some fine aberrations of *Acronycta psi*, *A. ligustri*, *A. rumicis*, *Tapinostola fulva*, *Hydroecia nictitans*, *Xylophasia polyodon*, *Mamestra brassicae*, *Apamea didyma*, *A. corticea*, *A. obelisca*, *Triphaena pronuba*, *Noctua glareosa*, *N. xanthographa*, *Taenicompa incerta*, *Anchocelis pistacina*, *Epunda viminalis*, *Plusia chrysitis*, &c., are good examples of the former, while *Venilia maculata*, *Selenia bilunaria*, *Amphidasis strataria*, *Abraxas grossulariata*, *Hybernia defoliaria*, *Ypsipetes sordidata*, &c., may *inter alia* be taken as representatives of the latter.

Professor Standfuss of Zurich, pursuing a line of experiments suggested by Weismann, has found that chrysalides when kept at an artificially high temperature produce forms peculiar to southern countries; but if exposed to a very low temperature they develop forms found as a rule only in the polar and sub-polar regions. In the course of his experiments he has by similar means also evolved forms of the greatest rarity in nature, such as the aberration *hygiaea*, Heydenreich, of *Vanessa antiopa*, in which the blue spots are wanting and the yellow border greatly increased in width; the aberration *testudo*, Esper. of *V. polychloros* with confluent black spots; the aberration *belisaria*, Oberthur, of *V. jo*, where the peacock eyes are absent, as well as very many other aberrations, the

mere enumeration of which would be out of place in an article of this kind. Dr. Barnett of Church Stretton, by following very similar lines, has produced some very interesting results. These experiments, if carried on in a systematic way, will doubtless have a tendency to modify in no small degree many of the tenets now held by the students of biology. They have, moreover, already shown us that temperature plays an all-important part not only in the reproduction of types as evidenced by the increase of insect life in favourable seasons, but also in the evolution of varieties and aberrations, some of which have become, as it were, stereotyped in certain localities owing to favourable environments.

It may, perhaps, here be mentioned that Wyre or Bewdley Forest lies partly in Shropshire, partly in Worcestershire, Dowles Brook, which here divides these two counties, running almost through its centre. Owing to the courtesy of Mr. Carleton Rea, M.A., B.C.L., who has exhaustively worked this district, I am enabled to include the insects found there.

The constant references in the following list to the Rev. C. F. Thornewill, M.A., F.E.S., no less than to Mr. F. C. Woodforde, B.A., F.E.S., attest more efficiently than any words of mine the great assistance given by both these entomologists, whose knowledge of the insect-fauna of the northern and north-eastern divisions of the county respectively has enriched the list by many species which otherwise would not, I fear, have figured therein. To both these my especial thanks are gratefully tendered. I wish, moreover, here not only to record my indebtedness, but also to express my gratitude individually to Col. Hope Edwardes, Mr. M. J. Harding, Mr. G. H. Paddock, F.Z.S., Mr. H. E. Peake, Mr. G. Potts, B.A., Mr. Carleton Rea, Mr. H. Tatton, and Mr. A. A. Thompson.

The classification followed in this list is, with very slight variation, that of Doubleday. With respect to the specific names, however, the most modern nomenclature has been used as given in Staudinger and Rebel's *Catalog der Lepidopteren des Palaearctischen Faunengebietes* (Berlin, 1901), but when this latter differs, the name by which the species is generally known in this country has also been retained as a synonyme.

The Roman numeral or numerals in brackets after each species indicate the month or months in which the perfect insect occurs; 'h' indicating that the insect has hibernated, or passed the winter, and reappears in the month or months indicated by the number; var. stands for variety; ab. for aberration.

Of the two lists referred to, one appeared in a *Guide Book of Church Stretton*, brought out some years ago by the late Mr. James Phillips; the other, by Mr. M. J. Harding, formed part of a *Handbook of Church Stretton* published by Mr. George R. Windsor. They are now out of print. Both dealt with the Rhopalocera only.

## RHOPALOCERA

(*Butterflies*)

Papilio podalyrius, L. (v, viii). Both Duncan and Morris give *Netley Hall*, some seven miles or so to the south of *Shrewsbury*, as a locality where this rare species has been taken. Col. Hope Edwardes, of *Netley Hall*, says that his late uncle, the Rev. Fred. Wm. Hope, recorded a specimen of this butterfly as taken there in August, 1825, and mentions that the larvae feed on the wild bullace (Prunus spinosa)

Gonepteryx rhamni, L. (viii–x, ii–vi, h.). Does not appear to be common anywhere within the county. All my correspondents speak of it as occurring only occasionally, and then singly. In August, 1900, I took a ♂ in a clover field in company with the following species, and found three specimens at the foot of the *Caradoc*, 29 June, 1902. On 30 March, 1907, I saw a ♀ at *Church Stretton*

Colias edusa, Fab.[1] (viii–x). Not found every year. Common some seasons, especially in clover fields and along railway banks. It was fairly abundant about *Church Stretton* in August and early September, 1900

[1] There is, so far as I know, no record of the capture of the ♀ ab. helice, Hübn., within the county. C. edusa varies a great deal, and some of its varieties were looked upon as distinct species by the older collectors. It occurs at times all over Shropshire.

## RHOPALOCERA (*continued*)

Aporia crataegi, L. This species—now almost extinct—was taken in *Wyre Forest*, 20 June, 1851, and 24 August, 1852 (*Trans. Worc. Naturalists' Club*, 1851, p. 10)

Pieris brassicae, L. (v–ix). Found everywhere throughout the county; it frequents gardens and fields, more especially where cabbages, turnips, and other cruciferae are cultivated; it is often seen also in woods; and on 23 July, 1902, I got two very fine ♀s in the *Helmeth Wood*, which almost agree in size and markings with specimens found in North-West Africa. Mr. M. J. Harding, of *Shrewsbury*, has reared some fine forms of this insect from larvae fed on canariensis, in which the fringes of the wings are yellow; and from larvae treated in the same way I have bred a few specimens of a distinctly yellow tinge (ab. ochracea, Newnham)

ab. chariclea, Steph. (v–vi). Generally smaller than the type; the apical patch on fore-wings of a light brown colour. Found now and again in the spring throughout the county. The larva of this species at times swarms to such an extent that it causes great damage to cabbages, &c., where these are cultivated on a large scale

RHOPALOCERA (*continued*)

Pieris rapae, L. (v–ix). Very common over the whole county. It is found in lanes, fields, and gardens alike. The larva is frequent in kitchen gardens, feeding like the last-named on various cruciferae

var. manni, Mayer. The black markings are better defined, and more of the colour of those of P. brassicae. This var. indeed, which is usually larger than the type, may well be a hybrid of P. brassicae and P. rapae

ab. immaculata, Cockerell. All the wings without any black markings or spots. This form of P. rapae does not appear to be at all common. I have caught it a few times; it is very close to the North American P. cruciferavum, Boisd., which is found in Canada and the Northern States[2]

— napi, L. (v–ix). Almost as frequent as the last-named and found in similar situations, and also commonly in turnip fields

var. napaeae, Esp. Differs from the type in that the greenish veins on under side of posterior wings only occupy the basal half of these wings. Staudinger says that this form is found in spring, which is contrary to my experience, as I have always noticed it in late summer and autumn in the *Church Stretton* district

ab. ♀ bryoniae, Och. The nervures of all the wings are much dilated, which gives the insect a very dark appearance, especially when on the wing. This form occurs frequently in the Alps and the polar regions, and has been taken by me a few times in the neighbourhood of *Church Stretton*. I met with a very dark specimen of the Alpine form in the *Watling Street*, 21 June, 1902

Euchloe cardamines, L. (v–vi). Common throughout the county in lanes and meadows, &c. Few of our Shropshire butterflies offer so many variations as this. The form usually met with about *Church Stretton* is not that given in Newman's *British Butterflies*, p. 156, fig. i, for the orange colour scarcely reaches the inner margin. Newman's form is only occasionally found in this part of England. In the spring of 1902 I caught a ♂ of this species in which the discoidal spot is reduced to a mere speck, while in two other instances it is so enlarged that it reaches the costa. The following forms are worthy of separate notice

ab. turritis, Och. Some years ago I took a very small ♂ which agrees with this ab. taken in Armenia and now in my collection, except that the discoidal spot is more within the orange portion of the wing. The underside of hind wings agrees with the true ab. turritis, being much whiter than in the type. This form was not infrequent in the spring of 1902

ab. cinerea, Newnham. On 17 May, 1886, I found a ♀ at rest on a fern near *Little Stretton*, in which the markings on tip of fore-wings and on the hind wings beneath, which usually appear green, though in reality formed by black and yellow scales, are replaced by light ashy-grey

ab. arsenoides, Newnham. This form, in which the ♀ has partial orange tips to fore-wings both above and beneath, was captured by me in the field immediately opposite the railway station at *Church Stretton*, on 16 June, 1887

ab. androgyna, Newnham. On 23 May, 1888, I caught a splendid ab. of this species, in which the right wings are those of the ♀, while the left ones offer the coloration of the ♂. The larva is very common about *Church Stretton* in July on various wild cruciferae, such as Cardamine pratensis, Hesperis matronalis, but especially on Sisymbrium officinale so common along our hedges, and the yellowish pyramidal ova are often met with on the underside of the calyx in June.

Euchloe hesperidis,[3] Newnham (vi). First noted by me as a distinct species. It is much smaller than E. cardamines, being but little over an inch in expanse; the discoidal spot is at the juncture of the orange and white colours, as in the European E. gruneri, H. S., E. eupheno, L., and E. euphenoides, Stgr., not well within the orange, which is the case with E. cardamines, L., and E. damone, Boisd. To those who know the European members of this genus well, there will be little doubt as to the validity of this species. E. hesperidis differs as greatly from E. cardamines as P. rapae does from P. brassicae

This species appears to be commoner some seasons than others. The year 1901 was prolific in small specimens of E. cardamines, but among them I did not take a single true E. hesperidis. It occurs late in May and June

Leucophasia sinapis, L. (v, viii). Mr. James Phillips, in his *Guide Book*, says that this species occurs round *Church Stretton*, but I have never met with it here

Melanargia galathea, L. (vii–viii). Given in Mr. Phillips's *Guide Book*. This species was fairly common in August during the early nineties on the *Ragleth*. I have not come across it for some years. According to Mr. A. A. Thompson it occurs about *Ellesmere*. I have often bred this species from the larva. The pupa is perfectly unattached in any way; it merely rests on the ground among the roots of grass and detritus

Pararge aegeria, L.; var. egerides, Stgr. (v, viii). Very local and uncommon at *Church Stretton Ragleth* and *Helmeth Woods*. Mr. G. Potts tells me that it is fairly common in woods about *Broseley*. The Rev. C. F. Thornewill reports it from the neighbourhood of *Calverhall, Whitchurch*. Mr. H. Tatton takes it commonly around *Petton Park* near *Shrewsbury*. It probably occurs sparingly in shady woods all over the county

[2] More than thirty years ago this species was accidentally introduced into North America where it has become well acclimatized, and where it frequently produces a yellow variety (ab. novangliae, Scudder), a form which is of extreme rarity in Europe, but of which I have taken a few specimens at Church Stretton.

[3] *Ent. Record*, v, 97, 229, &c. (1894); W. F. Kirby in Lloyd's *Nat. Hist.* No. 15, pp. 189, 190; *Science Gossip*, vii, No. 77, pp. 144, 148; *Guide Bk. of Church Stretton*, i, 122.

RHOPALOCERA (*continued*)

Pararge megaera L. (v, ix). All my correspondents give this species either as common or fairly common. It is much more frequent around *Church Stretton* of late years than it used to be. It offers in this district a dark form, corresponding to the continental P. moera L. var. adrasta Hbn.

Satyrus semele, L. (vii–viii). Occurs on most of the dry and stony hills around *Church Stretton*. Mr. Thompson reports the capture of a single specimen near *Ellesmere*

ab. leuconeurea, Newnham. Neuration of posterior wings white underneath. Taken once some years ago

Epinephile janira, L. (vi–viii). Now common in all the meadows around *Church Stretton*. A few years ago it was a comparative rarity here. From the reports of correspondents it seems to be very generally distributed throughout the county. In warm seasons I have sometimes taken a form approaching the southern var. hispulla, Hübn., which is larger and in the ♀ with more extensive fulvous patches on forewings and a well-marked fulvous band on hind-wings. In damp situations more or less bleached specimens are met with in which the fulvous is partially or totally replaced by greyish white. In 1902 I saw specimens flying so late as the middle of September

— tithonus, L. (vii, viii). Rather local about *Church Stretton*, though apparently of wider distribution than formerly. Mr. G. Potts reports it as common in certain parts around *Broseley*. The Rev. C. F. Thornewill says: 'Fairly abundant in lanes.' 'Common round *Shrewsbury*' (M. J. Harding). I have met with it very commonly in parts of Montgomeryshire, close to the Shropshire border

— hyperanthus, L. (vii.) Somewhat restricted in its habitat. Mr. Tatton speaks of it as fairly common. It occurs in the woods around *Broseley* according to Mr. Potts. It is also found freely on a few half-wooded banks about *Church Stretton*, as well as in the *Helmeth* and *Ragleth Woods*. Mr. A. A. Thompson reports it also from *Ellesmere*. In the early part of August, 1900, I caught a very diminutive ♂ in *Helmeth Wood*. Common on the *Wrekin* (M. J. Harding)

Erebia epiphron, Knoch; var. cassiope Fab. (vi–vii). Given in Mr. Phillips's *Guide Book* as occurring on the *Longmynd*, to the west of *Church Stretton*. I have never come across this insect here myself; but the Rev. W. Ashburner, formerly curate of this parish, who has taken this species in large numbers in Cumberland, told me on more than one occasion that the boggy slopes so common on the sides of many of these hills corresponded in all respects with the locale of this Erebia in the north of England. This species has the habit of flying only in the hot sunshine, and of secreting itself in the grass, even during the momentary disappearance of the sun behind a passing cloud; a habit which renders its detection a matter of no small difficulty

RHOPALOCERA (*continued*)

Coenonympha tiphon, Rott; typhon, Haw; davus, Fab. ab. philoxenus, Esp. ab. rothliebi, Stgr. (vi–vii). The Rev. C. F. Thornewill says that this insect is plentiful on *Whixall Moss*, about midway between *Whitchurch* and *Ellesmere*, especially in places undisturbed by peat-cutters; but owing to the nature of the ground, is not easy to capture. The latter end of June and the first half of July appear to be the proper time for looking it up in good condition. Mr. H. E. Peake gives the *Yetchleys* near *Ellesmere* as a locality for this form

— pamphilus, L. (vii–ix). Of universal distribution throughout the county, and appears equally at home whether in the valleys or on the summit of our highest hills. It varies a good deal in colour, as forms are occasionally met with quite as dark as ab. philoxenus of C. tiphon

var. lyllus, Esp. The border of all the wings darker and better defined than in the type. I have taken a few examples very close to this southern var. at *Church Stretton*

ab. ocellata, Tutt. Underside of posterior wings with a row of small eyes distinctly pupilled. I have several times taken this ab., which appears to be commoner than formerly, at *Church Stretton*

Limenitis sibylla, L. (vi). Given in Mr. Phillips's *Guide Book*. On 4 July, 1890, I saw this species about *Stretton*; it was in the low-lying part of the *Ragleth Wood*, the timber of which was for the most part felled some years ago

Apatura iris, L. (vii). This species is said both by Mr. Peake and Mr. Thompson to occur regularly every year at the *Yetchleys*, near *Ellesmere*. Mr. Harding met with it once only in the wood at the foot of *Haughmond Hill*, near *Shrewsbury* (July, 1881). I have seen it but twice at *Church Stretton*; once, about the middle of July, 1889, a little above the spot where I came across L. sibylla, and again on 24 July, 1900, on the northern side of the *Ragleth Wood*, a field's breadth to the south of the bridle-path to *Ragdon*. The larva has the constant habit, even when in captivity, of spinning a silken web over the leaf upon which it rests. It is found on the underside of the leaf of the sallow (Salix caprea) in damp woods, and more rarely on aspen (Populus tremula) and black poplar (Populus nigra) late in May, and the first three weeks of June

Pyrameis cardui, L. (vii–ix, iii–vh). Of irregular occurrence; some years it does not occur at all; others again it is common in clover fields, on railway banks, and in waste places where its food-plants—various thistles such as Carduus nutans, Carduus crispus, Cnicus arvensis, &c.—are plentiful. It occurs at times all over the county. This species varies much in colour and size, some specimens being very dark. The size of the ocelli on posterior wings too differ greatly. Very frequent in most parts of county in 1900. I have often noticed that seasons in which P. cardui is common are also generally productive of C. edusa.

RHOPALOCERA (*continued*)

Pyrameis atalanta, L. (viii–x, iii–vh). Common most years near woods in places where the food-plant of the larva, the stinging nettle (Urtica dioica), is abundant. It often enters gardens, being fond of feasting on over-ripe fruit. It seems to continue on the wing much later than the other common vanessae, but on the other hand is less often seen after hibernation. The larva forms a species of cage by uniting together three or four leaves of its food-plant, in which it spends its life and in which it also turns to a pupa. I have bred this species so late as 12 November in 1894, and have reared one or two examples which have a white dot in the red bands of fore-wings. I took another in which the red bands of posterior wings are almost white in places. The Rev. C. F. Thornewill says that this species is attracted by old 'sugar,' a habit which I have often noticed

Vanessa jo, L. (vii–ix, iii–vh). Very abundant in all the hilly districts of the county. Mr. F. C. Woodforde reports it as rather scarce about *Market Drayton*, but the other correspondents speak of it as common. About *Church Stretton* it is almost commoner than V. urticae most years. The larvae, which feed on the stinging nettle (Urtica dioica), are gregarious till their third moult, when they break up into small groups until pupation

— antiopa, L. (viii–x, iii–vh). The records of the capture of this rare species in Shropshire are few; Mr. Peake speaks of a single specimen having been taken at the *Mere Side*, *Ellesmere*, in 1872, by Mr. Horsefall, and of another found by the Rev. T. M. B. Owen at *Tedsmore*, near *Oswestry*, the same year. I saw a specimen flying over Stretton House grounds, *Church Stretton*, August, 1886, and two more the following spring, a short distance from *All Stretton*. A specimen of V. antiopa was seen 21 August, 1900, and two or three following days, feasting on ripe fruit in company with P. cardui in the rectory grounds at *Stapleton*. The larva of this insect seems to feed only on various species of Salices in Britain, while in Central France, where the insect is common enough certain years, it is found generally on birch (Betula alba)

— polychloros, L. (vii, viii, iii–vh). Very irregular in its appearance; not noticed some seasons; Mr Peake mentions it as being found near *Ellesmere*. It is decidedly uncommon and erratic in its occurrence about *Church Stretton*. Recorded from *Dudgeley*, *Watling Street*, between *Hope Bowdler Road* and *Botvylle Road*. Mr. Tatton takes it sparingly around *Petton Park*, near *Shrewsbury*

— urticae, L. (vi–ix, iii–vh). The Rev. C. F. Thornewill, speaking of this insect, says it is not very common at *Calverhall*. With this exception it appears to be very frequent and generally distributed throughout the county. This insect offers some very interesting vars. and abs., especially in the hilly districts. I have often taken a form about *Church Stretton* identical in every respect with the var. polaris, Stgr. from the Polar regions. An ab. very close to the ab. ichnusoides, Selys, but in which the two spots near outer margin are reduced to mere dots, not totally absent, occurs pretty freely in hot seasons. Dr. Barnett, of *Church Stretton*, has conducted some very successful experiments with V. urticae in its earlier stages, and by keeping larvae and pupae at a high temperature has succeeded in producing a var. which approaches the V. caschmirensis Koll., found in the Himalayas

ab. testudinella, Newnham. A very light form, red replaced by whitish pink. Taken by me at *Church Stretton*, 23 June, 1907

var. connexa, Butl. The median costal spot is connected with the large spot on inner margin by a black or blackish band. This form has been obtained by Dr. Barnett, and taken by myself at rare intervals

ab. atrebatensis, Boisd. Hind-wings suffused with black. Bred by Mr. Harding at *Church Stretton*, 6 July, 1905

ab. urticoides, F. d. W. Differs from the type in its small size. Both Mr. Harding and I have bred some good examples, some of which scarcely exceed one inch in expanse. Mr. Harding has also reared a few remarkable abs. in which the marginal blue spots are lengthened into wedge-shaped marks, the apices of which nearly reach the disc of posterior wings. Some examples of the larvae are almost entirely black, while in others the yellow greatly preponderates

Polygonia c-album, L. (vii, viii, iii–vh). Common in the greater part of the county some seasons, scarce in others. There is a great difference of colouration on the underside between the early and late broods, the former being of a light shade, the latter dark

ab. hutchinsoni, Robson Young. Wings less angulated; of a lighter colour; dark spots greatly reduced. This form is very close above to the southern Europe species P. egea, Cram. I have taken it a few times on the *Ragleth*. I got the larva very freely on the underside of stinging nettles (Urtica dioica) in the hot summer of 1893, and less commonly in 1901 on hop (Humulus lupulus)

Argynnis paphia, L. (vii, viii). This species appears to be most common in the hilly and wooded parts of the county. It is very fond of settling on bramble blossoms and on thistles. The ♀ in the district of *Church Stretton* is of a greener tinge as a rule than those of the south of England and Central Europe, and approaches the colour of ♀ A. pandora, Schiff. from Southern Europe. This insect is absent from the Rev. C. F. Thornewill's and Mr. Woodforde's lists. Mr. Tatton reports it as fairly common around *Petton Park*, and Mr. Peake gives the *Duke's Woods* and *Colemere* as localities for it. It is very common in the glades of the *Helmeth Wood*, *Church Stretton*, but is only occasionally found in the other and smaller woods. It is frequent in woods around *Ludlow* and in the southern portions of Shropshire, and is probably abundant in the *Edge Wood*, which extends almost from *Ludlow* to *Wenlock*, for Mr. Potts takes it in the woods to the north of that town. Recorded from *Wyre Forest*. It seems to vary very little in this county

Argynnis aglaia, L. (vii). This species seems more or less restricted to the hilly parts of the county, as it does not figure in any of the lists kindly forwarded to me. It is certainly less attached to woods than either A. paphia or A. adippe, for it is found in clefts of the hills, especially where the bracken fern (Pteris aquilina) is common, far from any wood. It appears much more subject to variation than either of the above. Occurs in *Wyre Forest.* A form not infrequent here has a row of sub-marginal silver spots on the underside of anterior wings ; it is common to both sexes. The ♀ is subject to much variations ; some are the colour of the ♂; others are strongly suffused with green, either with the marginal spots of the ground colour, or white ; others again are much suffused with black, often more or less shot with whitish-green. A. aglaia is the earliest of our large Argynnes about *Church Stretton*, and normally appears in the first week of July ; but in 1886 and 1887, two very warm years, it was common at the end of May

ab. aemilia, Acerb. Fore-wings black shot with dark green, six bright fulvous spots on disk, marginal and sub-marginal spots very faint. Hind-wings almost as in dark form spoken of above. I took a ♀ of this splendid ab. in the field below *Cudwell's Pool*, near the *World's End*, *Church Stretton*, on 21 July, 1897

— adippe, L. (vii). This, like the last two species, seems to be limited to the hilly districts of the county. It is especially common on the *Ragleth*, and is found, though more sparingly, in our other woods, such as those at *Tiger Hall* and the *Helmeth*. It appears a little later than A. aglaia, but does not vary with us to such an extent as this species. Recorded from *Wyre Forest.* One of the most frequent abs. seems restricted to the ♂, in which the marginal silver spots on underside of posterior wings are absent, being replaced by spots of the ground colour (ab. intermedia, Tutt.). I have, however, never met with the ab. cleodoxa, Och., in which all the silvery spots of hind-wings are missing, except the small silver dots in the centre of the sub-marginal row of dull-red spots. Another ab. has been taken by me (1 ♂ and 2 ♀'s), in which the posterior wings are much greener underneath, all the dark markings being well emphasized, especially those of the eye-like sub-marginal spots. It somewhat resembles the Spanish var. chlorodippe, H. S., and is a very striking form. The larva has the habit of climbing up dead bracken stems or blades of grass towards sunset ; I have several times taken it in this situation on the *Ragleth* late in June

— euphrosyne, L. (v, vi, s. viii). Common in the hilly parts of the county. Mr. Tatton speaks of it as frequent about *Petton Park.* Mr. Harding takes it freely at *Haughmond Hill*, near *Shrewsbury*. Mr. Potts meets with it around *Broseley* and it is recorded from *Wyre Forest.* It varies in *Church Stretton* a great deal as to size and in the extent of the black markings above ; underneath also, like the closely allied Alpine A. pales, Schiff, the intensity no less than the



extent of the reddish-orange markings differ widely. Mr. Harding has often taken this species in September about *Haughmond Hill.* I have never met with a second brood of this insect in *Church Stretton*

ab. rinaldoides, Newnham. The right fore-wing above is nearly normal, except that the marginal and sub-marginal spots tend to unite. Left fore-wing above has a quadrate black spot on the costa partly lost in the dark colour of base ; another quadrate black spot towards the centre of costa. Hind-wings deep black above, marginal and sub-marginal spots of normal colour, but showing faintly. Underside : right fore-wing almost normal ; left fore-wing with a broad irregular black band crossing its centre from costa to inner margin, where it is met by a much narrower oblique black band which starts from the costa at no great distance from the base. Underside of hind wings : basal half of wings greenish ochreous, with a single black spot near the base, from which there starts a long narrow silvery streak finishing outwards almost in a point ; outer half of wings reddish-orange in which are the seven usual marginal silvery spots, which are much larger than in the type, and of a different shape ; the first and second from costa are triangular, and reach half across the wing, as does also the last ; the remaining four are quadrate, not triangular, as in type. The hind-wings above are almost as in the polar var. fingal, Stngr. ; the underside nearly agrees, except in the colour of outer half of hind-wings, with the ab. rinaldus, Hbst. given by Newman in the third figure of A. selene. Newman's *British Butterflies*, p. 37. A ♀ of this remarkable ab. was taken by me on 4 June, 1901, in Mr. Bayley's rough marshy field to the north of the *Ragleth*

Argynnis selene, Schiff (v and s. viii). Appears to be more widely distributed in this county and less restricted to the hills than A. euphrosyne. Mr. Woodforde says that it is scarce around *Market Drayton.* Mr. Peake gives *Colemere*, *Sweetmere*, and the *Yetchleys* as localities near *Ellesmere ;* recorded for *Wyre Forest.* About *Stretton* it is very common in and on the outskirts of most of our woods ; it is also found in several damp parts of the hills around. It is usually a fortnight or so later in its appearance than the last-named species. In warm seasons it generally appears again sparingly in August, which has never been the case, so far as I can ascertain, with A. euphrosyne in the neighbourhood of *Church Stretton.*[4] A. selene lays its ova freely in confinement, but I have never been able so far to keep the larvae alive till the spring ; the spines are of a lemon-yellow colour ; this larva feeds in the hot sunshine on Viola canina in most of the woods around

ab. obsoleta, Newnham. The black spots absent from all the wings. Taken by me at *Church Stretton*, 28 June, 1907

[4] In the case of A. euphrosyne and A. selene, the autumnal form is not a second brood ; some larvae merely feeding up more quickly than their fellows, emerge in the course of August.

Melitaea aurinia, Rott ; artemis, Hübn. (vi). This species, the only representative of the genus in Shropshire, appears to be common enough in many of the damp meadows in the southern part of the county. It is a very local insect wherever it occurs ; partly owing to this fact and partly to its frequenting meadows laid up for hay, it is doubtless often overlooked. It is found in a few damp meadows about *Church Stretton*, *Ragleth*, *Botvylle*, near *Ticklerton*, and is recorded from *Wyre Forest*, &c. Few of the Melitaeae offer so many vars. and abs. as this, and on the continent these are very numerous. Dr. Staudinger, in his last *Catalogue* (1901), enumerates thirteen of these. The larva feeds up in April, and about *Church Stretton* it is generally found on devil's bit scabious (Scabiosa succisa), so frequent in damp situations. Mr. Harding has reared M. aurinia in certain numbers by feeding the larvae on honeysuckle (Lonicera periclymanum), and has obtained some nice vars.

Nemeobius lucina, L. (v, vi). Given by Mr. Phillips in his *Guide Book* as occurring about *Church Stretton*, but I have as yet never come across it here. It should be sought for in woods where Primula acaulis is common

Thecla betulae, L. (viii). Scarce. Occurs about *Petton Park*, according to Mr. Tatton. *Wyre Forest* (W. H. Edwards)

— pruni, L.(vii). Entered here solely on the authority of Mr. Tatton, who says that this species is scarce in the neighbourhood of *Petton Park*. This is the first instance to my knowledge of this insect having been captured or even seen in Shropshire. It is some time since Mr. Tatton collected, and his collection has been dispersed, so that verification of the specimen, or specimens, would be well-nigh impossible

— w-album, Knock (vii). Appears to be well distributed over the greater portion of the county. In the hilly districts it is generally not rare most seasons. It is very fond of settling on bramble in the neighbourhood of woods where the two species of elms (Ulmus campestris and Ulmus montana) occur. A few years ago, however, I got a single larva feeding on ash (Fraxinus excelsior) in the *Ragleth ;* it produced an imago under one inch in expanse

— quercus, L. (vii). Seems to occur pretty freely wherever there are oak woods to any extent. I have never met with this species settled on any flower, but it is very fond of perching on leaves, whether of oak, ash, nut, or whitethorn. I have only twice known of the pupa of this species being attached ; it usually lies on the ground, being sometimes partially buried

— rubi, L. (v, vi). The Rev. C. F. Thornewill refers to this species as abundant on *Millen Heath*, and once seen in vicarage garden, *Calverhall*. Mr. Tatton says that it is common about *Petton Park*. Mr. G. H. Paddock apparently saw it in some numbers sporting about brambles in the lane leading from *Soudley Pool* to *Chelmick*, some two and a half miles from *Church Stretton*. According to my experience, it is not generally common here, although Mr. M. J. Harding refers to it in his list as frequent on roadside brambles. Occurs on rough ground above *Cross Houses*, and entrance to *Ashes Valley*, *Caradoc*, &c.

Ab. immaculata, Fuchs. Underside without white spots. Appears commoner than the type about *Church Stretton*

Chrysophanus phlaeas, L. (vi–x). This is probably the only one of the genus now remaining to us, and is found commonly all over the county. It varies considerably as to colour, and especially in the size and shape of the sub-marginal black spots on anterior wings. I caught an ab. (aerefimbriata, Newnham) of this species, about midsummer, 1900, in a very damp meadow to the north of the *Ragleth*, in which the space between the row of black spots and the marginal band of fore-wings is of a bright brassy tint. On 1 June, 1901, I got a ♂ of C. phlaeas in which the left posterior wing is silvery-white, the rest of the insect being quite normal

ab. radiata, Tutt. Band on hind-wings is replaced by a few minute copper elongated marks. Taken at *Church Stretton* by Mr. Ward in August, 1907

ab. schmidtii, Gerh. Copper colour more or less replaced by silver colour. A very fine ♀ was taken by Mr. Harding, 6 September, 1906, and I also obtained two a few years ago

ab. caeruleopunctata, Stgr. A series of blue spots varying in number before the hind-margin of posterior wings. Both sexes of this ab. are found not infrequently about *Church Stretton*

Lycaena astrarche, Bgstr. ; medon, Esp. ; agestis, Hübn. (v, viii). Very local. Mr. Harding finds it on *Haughmond Hill*, near *Shrewsbury*. It is common on some of the hill-sides about *Church Stretton ;* north-west and southern slopes of *Caradoc ; Rabbit-Bury ;* hill between *Burway Gate* and *Reservoir*, &c.

— argus, L. ;[5] L. aegon, Schiff (vii, viii). This species is not common with us. Both the Rev. C. F. Thornewill and I have found it sparingly on the *Longmynd*, in dry, sandy spots. If this county were better worked, there is little doubt that this as well as the last-named species would be found in many places where their existence is at present unknown. I have taken an ab. ♀ in which the wings are of the same colour as in the ♂ (ab. bella H. S. ?)

— icarus, Rott. ; L. alexis, Hübn. (vi–ix). Common to the whole county. It is found in fields and lanes, there being a succession of broods throughout the fine weather. This insect varies vastly about *Church Stretton ;* towards midsummer a very large form occurs almost identical with the Southern European species, L. escheri, Hübn., but unlike this latter it has the two basal spots on the underside of fore-

[5] This must not be confused with the L. argus of Esper., which is the L. argurognomon of Bergsträsser, a species so close to this that it may well have been overlooked by our collectors, just as H. thaumas and H. lineola were formerly looked upon as one species. L. argurognomon is slightly larger than L. argus ; the black border is narrower, the sub-terminal row of ocellated spots on the underside of the fore-wings is not nearly so curved as in L. argus. It seems to me very probable that this species will some day be discovered in this county.

## RHOPALOCERA (*continued*)

wings; another form of the ♂ (ab. adonides, Newnham) was taken by me a few seasons back of a bright blue colour without a tinge of violet

ab. icarinus, Scriba; ab. thersites, Boisd. The basal spots on underside of anterior wings wanting. I have several times taken this form, both in a rough field SW. of the *Ragleth*, and also in the pasture situated beyond the rough ground above *Staley's Cottage*

♀ ab. caerulea, Fuchs. In which the ♀ is of the same colour as the ♂, and the broader dark border with a row of orange spots. It does not appear to be rare about *Stretton*

♀ ab. purpurea, Newnham. The ♀ of a purple tint, not rare

Lycaena argiolus, L. (v, viii). This insect figures in all the lists kindly sent to me. It is common about *Church Stretton* among holly trees and ivy. I have often watched the ♀ laying her eggs on the young shoots of the holly (Ilex aquifolium), the calyces usually being selected for this purpose [6]

— minima, Fuesl.; alsus, Fabr. (vi, viii). Given in Mr. J. Phillip's *Guide*, p. 60, as occurring around *Church Stretton*. It is almost sure to be found in many parts of the *Edge Wood*, on the lime formation

— arion, L. (vi–vii). Entered on the same authority as the last species. There are around *Wenlock* many an old rough pasture on the slopes of the *Edge* which form almost ideal localities for this local insect, and it probably only requires looking up

Syrichthus [7] malvae, L.; alveolus, Hübn. (v, vi). Seems somewhat local in this county, but common where it occurs. Mr. Woodforde gives it as scarce in the neighbourhood of *Market Drayton*. Mr. Tatton takes it in *Petton Park* and it occurs in the glades of the larger woods about *Broseley*. It varies in size, and I have taken specimens as large as the continental S. alveus, Hübn. Occurs around *Stretton*

Thanaos tages, L. (v, viii). Found almost everywhere in the county where there are dry banks. It is given in almost all the local lists

Hesperia thaumas, Hübn.; linea, Fab. (vii). Common on rough, broken ground, and in damp places among rushes, but rather local. This and the following species are very pugnacious, and often dart from their perch to pursue either one of their own species or some other insect which happens to attract their attention

— sylvanus, Esp. (v, viii). Common in grassy places either in or near woods, but also often found in rough ground

[6] The larva, which I have frequently taken here, scarcely agrees with the description of Ochsenheimer as given by Stainton; the form which I have met with is of a glaucous green, very downy, and with a blackish head, but with no visible line.

[7] The representatives of this genus number just twenty-four in Staudinger and Rebel's *Catalogue*, published in 1901. Many of these are so close to each other that it almost takes a specialist to differentiate them. Some of these are nearly sure to turn up in this county one of these days, when all the wooded districts have been well worked.

## HETEROCERA

### *Moths*

### *SPHINGES*

Smerinthus tiliae, L. (v–vi). This species appears to be rare in this county. On 2 July, 1902, Mr. Potts captured a very large ♀ at rest in his father's garden at *Broseley*; this I saw a few days later

— populi, L. (v–vii). Appears to be well distributed in this county and common in most of the districts. The Rev. C. F. Thornewill, however, says of it: 'Not so common as the last species,' (S. ocellata). This insect varies greatly as to size, colour, and markings. I have bred specimens at *Church Stretton* very little over 2½ in., while others reach 3⅞ in. I reared a ♂ and ♀ a few years ago in which the base of fore-wings is nearly white as far as the median band. Another fed on aspen when a larva is of a silvery grey tint; others again are suffused with violet; a very small ♀ is of a uniform grey and almost devoid of markings; it is very close to the var. populeti, Bien. In 1873 I kept some very young larvae of this species obtained from ova in somewhat crowded quarters, with the result that many had their horn bitten off, which proved fatal in each case. The following year when abroad I was fortunate enough to find the ova of Ch. nerii, L., in considerable numbers on the leaves of Nerion oleander; many of these also lost their horn when very young, but in their case it had no ill effect, and they went through all their changes as successfully as their more fortunate companions. I have repeatedly found the larva of S. populi on the laurel, so often seen in gardens

— ocellata, L. (v–vii). Fairly common. The Rev. C. F. Thornewill obtains it on sallows round *Calverhall* more freely than S. populi, but as a rule this latter appears to be the more generally common. The larva is usually found on willows and poplars, but I have several times taken it on apple-trees in orchards. This species, too, varies in the intensity of its markings

Acherontia atropos, L. (viii–x). Occurs in favourable seasons all over Shropshire, and on rare occasions in large numbers. Mr. Woodforde took eleven specimens in 1895, four in 1897, two in 1899, and in 1900 he got over two hundred, principally pupae, all in the neighbourhood of *Market Drayton*. The Rev. C. F. Thornewill records the insect as occurring in the larva state at *Whitchurch*, *Prees*, *Ightfield*, and *Calverhall*. Mr. Peake speaks of its capture at the *Green Banks*, *Ellesmere*. Mr. Williams, of the Carding Mill, near *Church Stretton*, has often taken the perfect insect at light. Some years ago I came across some thirty or forty ova of this species, and reared the larvae on jessamine; among their number were two which retained their grey colour after their third coat. A larva of this insect which I got in 1900 burrowed on 31 October, and a few days later came once again to the surface, and eventually died

HETEROCERA (*continued*)

*SPHINGES* (continued)

Sphinx convolvuli, L. (viii, ix). Mr. Woodforde says that this species is scarce around *Market Drayton*. Mr. Peake records it from *Ellesmere*. It occurs sparingly about *Church Stretton*, and a beautifully fresh ♀ specimen was picked up off the footpath in the main street of *Church Stretton*, and brought to me so late as 5 October, 1901, by Mr. Walter Jones. It occurs probably all over the county, some years not infrequently. It appears to fly much later than any other of the Sphingidae, and I have seen it hovering over jessamine in some numbers at 2 a.m.

— ligustri, L. (vi, vii). This species does not seem to range so far north as the last-named. Mr. Potts tells me that a schoolfellow of his, Mr. Llewelyn H. Twentyman, used to take S. ligustri in this county some years ago. A very large ♀ was captured at *Coalport* at the end of July, 1902, by Capt. A. B. Garrett. A boy brought me a nearly full-fed larva of this species on 4 September, 1899, and the same evening I got a much smaller one off privet (Ligustrum vulgare) in the grounds of *Woodcote*. The former produced a very large ♀, the latter an average ♂, the following year (1900). The larva of this species is much more often seen than that of S. convolvuli, as it feeds quite exposed on privet, lilac, and many other shrubs. The constant habit which it possesses in a marked degree of arching its anterior segments when at rest caused, it is said, the name of Sphinx to be applied to this group of insects

Choerocampa celerio, L. (x). A fine ♀ specimen of this rare southern hawk-moth was taken by Mr. Potts in his garden at *Broseley* on 18 October, 1897, hovering over a fuchsia, and he kindly presented me with the insect two days later. It is in such splendid condition that there is no doubt but that the larva fed up somewhere in the immediate neighbourhood. Though I have for years been in countries where this species is very common and have repeatedly taken it at flowers, I never saw it at light, its partiality for which is often referred to in books

— elpenor, L. (vi). It seems to occur in most parts of the county, and is referred to as common or fairly common by many of my correspondents. About *Stretton* it is not nearly so frequent as Ch. porcellus, yet it is not rare. In 1896 I got full-fed larvae of this species so early as 21 July, and they pupated a few days later

— porcellus, L. (v–vi). This beautiful little hawk-moth appears to be rather scarce in many parts of the county. Mr. Woodforde gives it as scarce in the neighbourhood of *Market Drayton*. Both Mr. Peake and Mr. Thompson hold records of its capture in the district around *Ellesmere;* the former gives *Whixall Moss*, the latter *Whattall Moss* as localities. About *Church Stretton* it is common most years. It hovers at twilight in company with Ch. elpenor, over rhododendron and honeysuckle. The larva is

HETEROCERA (*continued*)

*SPHINGES* (continued)

not rare about here, and is found on dry banks feeding on lady's bedstraw (Galium verum) in August; though in 1898 I met with the larvae on high ground till the beginning of October. I have occasionally obtained the form of the larva in which the usual grey is replaced by pea-green

Macroglossa stellatarum, L. (v-ix). Distributed throughout the county. Occasionally common but uncertain in appearance. It hovers over flowers in the hottest sunshine. I have taken the larvae at *Church Stretton* rather freely on Galium verum in hot weather and have repeatedly noticed this species as it hovered along stone walls. In the summer of 1901 I saw several specimens flying around a rock on *Hazler Hill*

— scabiosiae, Zeller; bombyliformis, Esp. (v–vi). Mr. Woodforde finds this insect about *Market Drayton;* it is, however, scarce. I have never come across it in any of the woods near *Church Stretton*, though it is more than probable that it occurs here, as well as in a great many other districts of the county. On 15 April, 1900, Mr. G. H. Paddock, F.Z.S., noticed one of the bee-hawks, but whether this or M. fuciformis, L., he could not tell, flying along the rocky bank to the right of the new road leading from *Stretton* to the Hydro, in company of M. stellatarum. Recorded from *Wyre Forest*

Trochilium apiforme, Clerck. (v–vii). Mr. Thompson records it from *Ellesmere*, and it doubtless occurs over the county among poplars. It is not so frequent about *Stretton* as the following species

— crabroniforme, Lewin; bembeciforme, Hübn. (vii). Mr. Woodforde speaks of this clearwing as common in his district. It occurs over so large an area about *Church Stretton* that the probabilities are in favour of its extending over the whole county. I know of several sallows in various directions, the trunks of which are riddled by the larvae of this species. I have taken it flying heavily in the hot sunshine on the *Ragleth*

Sesia spheciformis, Gerning. This rare insect is recorded three times from *Wyre Forest*, viz. on 6 June, 1897, and 11 and 18 June, 1899 (Carleton Rea)

— tipuliformis, Clerck (vi). Mr. Woodforde takes it freely around *Market Drayton*. Generally found more or less commonly in gardens where the red currant (Ribes rubrum) is cultivated to any extent; especially where the trees are not looked after too much. Staudinger says that the larva also feeds on black currant (Ribes nigrum). The perfect insect flies in the sunshine, and settles often on the leaves of the currant bushes

— vespiformis, L.; asiliformis, Rott; cynipiformis, Esp. (vi–vii). The Rev. Charles Woolley took a ♀ of this species on the window of his sitting room in *Church Stretton* on 23 July, 1901, and was good enough to give me the specimen. It has been taken also in *Wyre Forest*, 6 June, 1897 (Carleton Rea)

HETEROCERA (*continued*)

*SPHINGES* (continued)

Sesia culiciformis, L. (vi). Miss Paddock used to take this insect in her garden at *Caynton* near *Newport*, in a hedge round which were a few birches (Betula alba). It occurs probably not uncommonly over the greater part of Shropshire where these trees are plentiful. I have several times reared this species at *Church Stretton*. Mr. Carleton Rea records it from *Wyre Forest*, 6 June, 1897

Ino statices, L. (vi–vii). Very local ; it occurs in rough unbroken ground and in damp meadows, but it is liable to escape notice, and is therefore absent from many a list in which it ought to figure. It is found in several localities near *Stretton*, such as rough meadows to the north of *Ragleth ;* entrance of the *Ashes Valley* near *Little Stretton ;* rough ground above *Staley's Cottage*, &c.

Zygaena lonicerae, Esp. (vii). Rather widely distributed. Mr. Woodforde speaks of it as ' fairly common but very local.' Mr. Potts finds it freely on *Farley Common* near *Much Wenlock* on a limestone formation in July. It has the habit of settling on the flowers of knap-weed (Centaurea nigra). I took it not infrequently on the *Ragleth* in the early nineties. Common near *Marrington Hall, Chirbury* (A. R. Harwood).

— filipendulae, L. (vii). This is usually the most widely distributed of all the Zygaenae, and yet it does not figure in any of the lists kindly sent by correspondents. From my experience it is anything but common about *Church Stretton*. It occurs on old rough pastures and meadows on the *Cwms* to the south-east of the *Caradoc*, meadows to the south-west of *All Stretton*, and very possibly in most similar localities in the county. Like the last two species it flies heavily in the hot sunshine. It appears to be very abundant on the lime formation. Recorded from *Edge Wood, Rushbury, Wenlock*, &c.

*BOMBYCES*

Hylophila prasinana, L. (v). The Rev. C. F. Thornewill speaking of this insect says: ' Larva once beaten, *Cloverley Park*.' Mr. Woodforde reports it as fairly common some years near *Market Drayton*. Not uncommon around *Church Stretton* in the larva state, where it is frequently seen on the trunks of oaks in July and August. The cocoon often spun on oak bark resembles a miniature boat with its keel uppermost. I have never met with the imago in this neighbourhood

Nola cucullatella, L. (vi). The Rev. C. F. Thornewill takes it regularly in *Calverhall Vicarage* garden. Mr. Woodforde reports it as of frequent occurrence in his district. I have both taken the perfect insect at rest on trees, &c., and bred it from the larva ; the latter, which is hairy, is frequently found on whitethorn (Crataegus oxyacantha) in May. It spins a fusiform cocoon, generally at the juncture of the thorn with the branch

— confusalis, H. S. ; cristulalis, Dup. There are two records of this insect, viz. on 17 June, 1899 and 9 June, 1900

HETEROCERA (*continued*)

*BOMBYCES* (continued)

Nudaria senex, Hübn. (vii, viii). Scarce. This species is given in Stainton's *Manual*, i, 141, as being found in the neighbourhood of *Shrewsbury*. Mr. Woodforde takes it in rough unbroken ground not far from *Market Drayton*

— mundana, L. (vii, viii). Fairly distributed, but is doubtless often overlooked on account of its small size and sober garb. It is found on old moss-grown walls with us, and comes not uncommonly to light

Cybosia mesomella, L. (vii). This species is recorded from *Wyre Forest* by Mr. Carleton Rea

Lithosia griseola, Hübn. (viii). This species is given in Stainton's *Manual* as occurring regularly in the neighbourhood of *Shrewsbury*. I have not come across it as yet around *Stretton*. Occurs in *Wyre Forest*

— lurideola, Zinck ; complanula, Boisd. (vii). One of the commonest and most widely distributed of the Lithosidae. It occurs pretty frequently all over Shropshire. I have on several occasions taken it at sugar

— complana, L. (vii). More local and much rarer than the last-named, which it greatly resembles. I have taken the perfect insect at rest on the ground in a field near the entrance to the *Ashes Valley*, and at the foot of the *Caradoc*, and have come across the larva frequently in coppice above *Staley's Cottage*

Gnophria rubricollis, L. (vii). Found occasionally clinging to a blade of grass in old pastures and broken ground. Apparently not common

Emydia cribrum, L. This rare species has been taken in *Wyre Forest*, according to Dr. C. Hastings

Euchelia jacobaeae, L. (vi). Mr. Woodforde says that this species is scarce in his district. Mr. Potts reports it as very abundant around *Broseley*. It used to be quite a rarity in *Church Stretton*, but of recent years it has become very common. The larva is very frequent with us on groundsel (Senecio vulgaris) ; it is remarkable as having only a few straggling hairs, quite the exception in this hairy group

ab. flavescens, Th. Mieg. All the red colour replaced by ochreous yellow. This scarce form was bred by me from larva taken at *Church Stretton*, 28 June, 1902 ; it was also taken here by Mr. Harding in 1905

Euthemonia russula, L. (vi). The only locality in which I have come across this insect is a small wood to the south-west of the *Ragleth*, among fern and heather. It occurs also regularly in *Wyre Forest* and on *Whixall Moss*

Nemeophila plantaginis, L. (v, vi). Very abundant among heather on the *Longmynd ;* less frequent in the valleys. The ♂ of this species flies over the heather very swiftly in the hottest sunshine from about 1 to 5 p.m. It assembles well, especially towards the middle of the afternoon. Found on all the moorlands of the county.

ab. hospita, Schiff. Hind-wings and sides of the abdomen white. Very local about *Church Stretton*, and uncertain in its appearance ; it seems to be commoner in seasons following severe winters

ab. matronalis, Freyer. Posterior wings

HETEROCERA (*continued*)

*BOMBYCES* (continued)

almost entirely black. I have bred this form occasionally

♀ ab. rufa, Tutt. The hind-wings more or less of a rosy colour. This is the typical form of the ♀ on the continent. I have obtained it only a few times from larvae ; it is uncommon about *Stretton*. Though the posterior wings of the ♀ are usually yellow here, the abdomen of this sex is mostly red, but now and then specimens are met with the abdomina of which are yellow

Arctia caja, L. (vii). The Rev. C. F. Thornewill says of this species : 'Not very common ; perfect insect only once taken in vicarage garden.' Mr. Woodforde refers to it as fairly common. I find it freely enough in the larva state. Few insects offer so many varieties as this ; in some the coffee colour invades almost the whole of the fore-wings, in which case the dark blue spots of hind-wings are very large, lending them a dark appearance ; in others, again, the white markings of anterior wings preponderate, when as a rule the dark spots of posterior wings are small, giving the whole a light appearance. I have a few times reared a form in which all the white markings are suffused with a lovely pink blush (ab. rosacea, Newnham)

ab. flavescens, Voelsch. Hind-wings, abdomen, and collar yellow, very much of the shade found in A. villica. This rather rare form was brought to me by a workman at *Church Stretton* some few years ago. I have often bred a var. in which there is a yellowish ring around the dark spots of hind-wings as well as yellowish radii towards the base, but as yet have failed in obtaining any specimens by breeding of the true ab. flavescens

Spilosoma fuliginosa, L. (v, vii). Mr. Woodforde finds this insect but occasionally in his part of the county. Mr. G. H. Paddock often sees it at *Ercall Heath* near *Newport*. It is found about *Church Stretton*, both in the valleys and much more frequently on the *Longmynd*, especially on the heath to the south-east of the 'House on the Hill.' It flies heavily in the bright sunshine, and might then well be taken for Z. purpuralis, Brunnich (Z. minos, Fuesl.). Unlike the other members of the genus, this species passes the winter as a larva

ab. borealis, Stgr. Hind-wings black except the inner margin and fringes, which are red ; the fore-wings of a darker shade than in the type. This is the form usually met with on the *Longmynd*

— mendica, Clerck (v, vi). Found along old walls, near disused buildings, in quarries, &c. Occurs rather sparingly about *Church Stretton*. It comes to light. Either this insect is very uncommon in the county, or, what is more probable, generally overlooked, as it appears in one only of the lists, viz., *Wyre Forest* (Carleton Rea)

— lubricipeda, Esp. (vi, vii). For a number of years this species became rather scarce about *Stretton*, but has appeared more freely the last two seasons. The Rev. C. F. Thornewill does not refer to it in his list, but most of the other correspondents consider it common

HETEROCERA (*continued*)

*BOMBYCES* (continued)

Spilosoma menthastri, Esp. (vi, vii). Abundant throughout the county. It swarms at light, and is often found at rest, along walls, on palings, &c. It varies greatly as to the number and size of the black spots, and also in colour, some being of a rich cream shade

ab. walkeri, Curt. Black spots more or less elongated so as to form black interrupted lines. Found pretty frequently about *Church Stretton*

— urticae, Esp. ; papyratia, Marsh (vi). I caught two specimens of this rather uncommon insect a few years ago not far from where *Woodcote* now stands. A ♂ was brought to me by Mr. W. Jones in June, 1900, which he caught at light

Porthesia chrysorrhoea, L. (viii). Mr. Thompson informs me that this species is found near *Ellesmere*. Mr. Potts takes it near *Broseley*. Mr. G. H. Paddock reports it as very common about *Caynton*, near *Newport*. I have never come across it about *Church Stretton*. The larva is very similar to that of the following insect, but all the colours are much duller

— similis, Fuesl. ; auriflua, Fab. (viii). The Rev. C. F. Thornewill says : 'Very abundant, especially in the larva state.' Mr. Woodforde takes it freely near *Market Drayton*, and it is found, though not abundantly, about *Stretton ;* it flies somewhat heavily at dusk near whitethorn hedges. Common on *Whixall Moss*. The irritant property of the larva of this insect is known to most entomologists, yet in places where the larvae are abundant, I have often noticed the blue tit swallow them as fast as it could pick them off the hedges, and this apparently with perfect immunity.

Lencoma salicis, L. (vii, viii). Not uncommon among poplars and willows ; the larvae hibernate young and climb up the trunks of these trees just as they are coming into leaf. I have frequently noticed them doing so in early spring at *Church Stretton*. The pupa is often spun between two leaves ; I have several times found it in such a position on the black poplar (Populus nigra)

Dasychira pudibunda, L. (v, vi). The Rev. C. F. Thornewill says : 'Larva at *Shavington*, October, 1899.' Mr. Woodforde reports it as common in his district. The beautiful larva is often met with about *Church Stretton*, where I have taken it on elm and on black poplar. The pupa not infrequently is spun under loose bark

Orgyia gonostigma, Fab. (vi). The larva of this uncommon insect was taken in *Wyre Forest* 23 July, 1897 (Carleton Rea)

— antiqua, L. (vii, x). Appears to be common, but not abundant, in most parts of the county ; the ♂ is often noticed flying swiftly in the bright sunshine. The semi-apterous ♀ is much more rarely seen

Demas coryli, L. (vi). This species does not figure in any of the local county lists. I have taken the larva infrequently on sallow (Salix caprea), but have never met with the imago in a state of nature around *Stretton*

HETEROCERA (*continued*)

*BOMBYCES* (continued)

Trichiura crataegi, L. (ix.) This appears to be by no means a common insect in Shropshire. I have met with the larva at *Church Stretton* on willow and apple trees in orchards. It has a habit, like many of the smaller Bombyces, of sunning itself on the trunks of trees. The larvae both of this and P. populi vary greatly ; much more than with E. lanestris, C. neustria, or C. castrensis, all of which are pretty constant in their markings. Recorded from *Wyre Forest*

Poecilocampa populi, L. (xi, xii). Mr. Woodforde reports it as fairly common about *Market Drayton*. Judging by its frequency at *Church Stretton* it may fairly be inferred that it is pretty generally distributed over the county. The larva often conceals itself in the crevices of bark, oak, ash, elm, &c. I have met with it on almost every forest tree, and not uncommonly on garden fruit trees. The perfect insect is occasionally found at rest on tree trunks, &c. and comes to light

Eriogaster lanestris, L. (iii). The Rev. C. F. Thornewill says that the nests of this larva are very common some seasons in the lanes about *Calverhall*. Mr. Woodforde finds this species commonly about *Market Drayton*. It occurs, but not frequently, about *Stretton*. The larvae are usually met with living in a large web in some numbers, but I have now and again come across them singly on elm and whitethorn where no nest was visible. Generally, however, the larvae are gregarious until their last moult, when they separate for pupation. The pupa, like that of the closely-connected continental E. catax, L., frequently remains in that state for two, three, or even more years

Clisiocampa neustria, L. (vii, viii). Not common in the county. I have met with the larvae sparingly among hedges to the north-west of the *Ragleth ;* they keep together up to their final moult and then disperse for spinning. The fusiform cocoon contains a powder which looks exactly like flour of sulphur. The larva of this species is very similar to that of its congener C. castrensis, L., but its colouring is much brighter, a repetition of that found in P. similis and P. chrysorrhoea. The larva of C. castrensis has black spots on the underside, which are absent in C. neustria. There are regularly two forms of the imago, common to both sexes ; the one is of a reddish-brown with two transverse ochreous lines on anterior wings, the other of an ochreous yellow, the transverse lines being brown. The ♀ deposits its ova in regular rings round the branches of the food-plant. I have now and then bred specimens intermediate between these two forms

Bombyx rubi, L. (vi). Common as a larva in the valleys, but much more abundant on the *Longmynd* among heather in the autumn : it hibernates in this stage, and spins a loose very long cocoon among this plant at the end of the following April or in early May. The ♂ flies with great rapidity just above the heather a little after sunset about the middle of June. It has always been a problem with collectors how

HETEROCERA (*continued*)

*BOMBYCES* (continued)

successfully to rear this species. I have tried various ways, and have found that the best results by far were obtained by ' sleeving ' the larvae in an old sack, the bottom half of which is filled with dry moss, on a growing branch of blackberry. On opening the sack in early May I have been gladdened by finding healthy pupae spun up in the moss. Mr. Peake mentions this species in his list of *Ellesmere* Lepidoptera. I imagine that this insect occurs all over the county, but is more frequent in localities in which there is either rough unbroken ground or moorland

Bombyx quercûs, L. (vii, viii). Not nearly so common about *Stretton* as the following insect. Now and again it occurs among hawthorn hedges in the valleys. Mr. Woodforde gives it as fairly common in the neighbourhood of *Market Drayton*, and Mr. Thompson speaks of *Ellesmere* as a locality. It is doubtless to be found in all the flat parts of Shropshire. Recorded from *Whixall Moss*

— callunae, Palmer (vi). Occurs commonly on the high moorlands of the county, such as the *Clee Hills*, *Stiperstones*, and the *Longmynd*. The ♂ assembles freely from about 11 a.m. to 4 p.m. The ♀'s vary greatly both in size and colour.

Odonestis potatoria, L. (vii, viii). Mr. Woodforde refers to this insect as scarce in his district. Mr. Thornewill says :—' Larva found, but not commonly.' From my own experience I am led to think that O. potatoria is common enough in the larva state wherever there are damp hedge banks and ditches. It occurs freely about *Stretton*. I have taken the ♀ flying at dusk. It varies greatly. On one occasion Dr. Barnett and I found the ova on the leaf of an alder (Alnus glutinosa)

Gastropacha quercifolia, L. (viii). Has been taken a few times in the larva state, but I have never met with the imago at *Church Stretton*. This species does not come out in this part of Shropshire before August ; on reference to my notes I find that 10 August is the earliest date on which I ever bred it. Found to the east of *Tiger Hall Wood*, not far from the *Howlett's Nest, Church Stretton*

— ilicifolia, L. (v). This and C. bicuspis are two of our greatest rarities. The few specimens which I have been fortunate enough to get have been at the expense of many miles over the *Longmynd*, where I have taken it occasionally in the larva state feeding on bilberry (Vaccinium mytillus). The earliest date of emergence which I can find is 17 May, and the latest 24 May

Endromis versicolora, L. (iii, iv). Its only locality about *Church Stretton* used to be the extreme northern part of the *Ragleth Wood*, among birches. Most of the trees there were felled some years ago, and all the undergrowth cut down, doing away with not only this species, I am afraid, but also with G. derasa, Th. batis, C. fluctuosa, A. diluta, N. stigmatica, and many other insects in so far as that locality is concerned. The typical E. versicolora of this district appears to be smaller and darker than those from the more southern counties. The ♂ assembles freely in the forenoon. The larvae

when young remind one greatly of those of saw flies, not only in colour, but also in the way in which they hang in small groups at the extremities of the twigs of birch. Mr. Carleton Rea records it from *Wyre Forest*, 3 April, 1897, 21 April, 1898, and 16 April, 1901

Saturnia pavonia, L. ; pavonia-minor, L. ; carpini, Schiff (iv–v). One of the most beautiful of the British moths, and of universal distribution throughout the county ; it is, however, especially common in those districts where there are large tracts of heather, one of the favourite food-plants of the larva. The ♂ assembles readily in the afternoon, but from my own experience not in the morning or evening. I have noticed the ♀ now and then flying over the heather just as it was growing dark. Few species vary so much as this, both in the larval and perfect states. From the same batch of ova I have repeatedly reared larvae the tubercles of which have been either black or white, pale pink, dark pink, violet, pale yellow, or orange ; some of these again were banded with dark velvety black.[8] In the imago every shade intermediate between whitish grey and a dark smoky tint may be found. There are in *Stretton* two forms so well marked that I venture to notice them separately

ab. rosacea, Newnham. Markings strongly suffused with pink. I have occasionally obtained both sexes of this fine form from larvae taken at *Church Stretton*

ab. infumata, Newnham. All the wings of a dark smoky colour. The insect looks as if it had been subjected to the action of peat smoke. Of this remarkable ab. I have reared 3 ♂'s and 1 ♀

Hepialus humuli, L. (vi). Found all over the county ; very common in damp meadows. The ♂'s of this species and of H. hecta hover over the same spot exactly as if attached to a pendulum. H. humuli varies much in size ; some ♀'s are very large

— fusconebulosa, De Geer ; velleda, Hübn. (vi–vii). Very common in the hilly parts of the county among the bracken fern (Pteris aquilina). It does not appear in either the Rev. C. F. Thornewill's or Mr. Woodforde's list. It varies much

ab. gallicus, Led. White markings absent ; the wings being also of a reddish brown shade in ♂. Found rather frequently with the type

— sylvina, L. (vii–viii). Not uncommon at twilight in lanes and meadows. It varies somewhat, some ♀'s being of a chocolate colour.

— lupulina, L. (v–vi). Abundant everywhere throughout the county. It offers much variation in size and colour

ab. dacicus, Caradja. The white markings are wholly or in part obliterated. I have met with a few examples of this about *Church Stretton*

Hepialus hecta, L. (vi). In and near damp woods ; rather restricted in its habitat. Found commonly around *Church Stretton*, *Helmeth*, and *Ragleth Woods*

Zeuzera pyrina, L. ; aesculi, L. (vii). Given both by Mr. Peake and Mr. Thompson as occurring about *Ellesmere*. The former says : 'Beaconsfield House, *Ellesmere*. J. A. Skare Jennings.' Has not been recorded from *Church Stretton*

Cossus cossus, L. ; ligniperda, Fab. (vi, vii). Found in the neighbourhood of *Ellesmere*, and probably in many other parts of the county. A few larvae were obtained about *Little Stretton* some years ago, but the species has not been met with about *Church Stretton*. The Rev. C. F. Thornewill reports that a larva was found near *Prees* in 1903

Cerura vinula, L. (v–vi). Common everywhere in the county. The only direction in which it appears to vary is in the greater or less intensity of the dark markings. I have met with the pupa spun on oak and on wooden palings, illustrating the wandering tendencies of the larva when full-grown

— bifida, Hübn. (vi, viii). Mr. Woodforde only finds this species occasionally about *Market Drayton*. Mr. Potts has met with it around *Broseley*. Dr. Barnett, Dr. Bradburne, and I have often come across the cocoon spun on poplar (Populus nigra) and aspen (Populus tremula) ; the cocoon is much more easily found than that of C. furcula. On 3 June, 1902, I caught a newly emerged ♀ on a large poplar near the brick-yard at the *World's End*

var. urocera, Boisd. Dark markings fainter ; outer edge of central bar obliterated at lower end. Some years ago I bred several specimens of this var. from larvae taken at *Church Stretton*

ab. aurea, Newnham. The median band of anterior wings very strongly tinged with orange. Bred by me on 27 June, 1894, from ova found on a row of poplars near the brick-yard at *Church Stretton*. This is a beautiful form of the insect

— furcula, Clerck (vi, viii). A few larvae found about *Church Stretton* most seasons on sallow (Salix caprea), very rarely on black poplar (Populus nigra). The pupa of this species is very hard to find ; those obtained by me here were spun on gate posts near sallows. It probably occurs throughout the county sparingly

— bicuspis, Bork. (v–vi). Mr. Woodforde reports this insect as very scarce near *Market Drayton*. About *Church Stretton* I look upon this as one of our greatest entomological prizes. I have on many occasions found the cocoon—generally empty, I regret to say—on alder (Alnus glutinosa), and twice only on birch (Betula alba). Dr. Barnett, Dr. Bradburne, and I have found the larva by searching the upper side of the leaves of alder in July. Early in the nineties I bred this rarity so late as the middle of September. On referring to my diary I find :—'A beautiful ♀ C. bicuspis out,' 11 September, 1893

[8] This great variation in the colour of the tubercles in the larvae of S. pavonia is very remarkable when we consider that the closely allied S. pyri, Schiff, and S. spini, Schiff, two species found on the continent, offer no similar variation, the tubercles of the larva being invariably turquoise blue in the former and ochreous in the latter in their last coats.

# INSECTS

## HETEROCERA (*continued*)

### *BOMBYCES* (continued)

Stauropus fagi, L. (vi). This scarce insect was taken in *Wyre Forest*, June, 1899 and June, 1900

Notodonta dromedarius, L. (vi). The Rev. C. F. Thornewill, speaking of this species, says: 'At light, *Calverhall*, August, 1900.' Obtained not uncommonly about *Church Stretton* in the larva on alder and birch. It seems to be generally distributed

— ziczac, L. (vi, viii). The Rev. C. F. Thornewill takes it both in the larva state and the imago at light. Mr. Woodforde marks this insect as fairly common. At *Church Stretton* it is frequent as a larva on willow and sallow. It varies greatly in size; I have specimens reared here quite as large as N. tritophus, Esp. The ova of both N. ziczac and N. tritophus are of a light bluish green colour

— trepida, Esp. (v–vii). Does not appear to be of general distribution in the county. It occurs, not commonly, throughout the *Church Stretton* district. I have several times come upon batches of ova of this species deposited on oak bark. Once I found a lot of eggs on the bark of whitethorn (Crataegus oxyacantha). I have often reared the handsome larva

Leiocampa tremula, Clerck; dictaea, Esp. (v, vii). Not infrequent among poplars, at the roots of which the pupa is often obtained in the autumn, and on the trunks of which the perfect insect is found. It is fairly common around *Stretton*, *Broseley*, *Ellesmere*, and doubtless in most parts of Shropshire

— dictaeoides, Esp. (v, vi). Found—some years rather commonly—at rest on birch trees. It is scarce according to Mr. Woodforde about *Market Drayton*. Mr. Potts finds it near *Broseley*. I have taken it frequently at *Church Stretton*, both as a larva and imago, and once came upon an undeveloped ♂ specimen on the trunk of a sycamore (acer pseudo-platanus)

Lophopteryx camelina, L. (vi, viii). Seems to be one of the commonest and most generally distributed of this family. It is often found at rest and flying at dusk. It is fairly common at *Market Drayton*, and frequent about *Broseley*. I have found the larva up to very late in the autumn on various forest trees. It comes to light

Pterostoma pulpina, L. (vi, vii). The Rev. C. F. Thornewill finds the larva on aspen at the *Twemlows* near *Calverhall*. The insect is common around *Broseley*, where it has been taken both by Mr. Potts and Dr. Bradburne. I have several times got the larva off willow and sallow at *Church Stretton*

Drymonia trimacula, Esp.; dodonea, Hübn. (v–vi). More generally distributed and commoner than the following species. I have taken the imago at rest on oak, and have several times obtained the larva both on oak (Quercus robur) and on birch (Betula alba). Recorded from *Wyre Forest*

— chaonia, Hübn. (v). I have come across the larva of this species sparingly on oak in the neighbourhood of *Church Stretton*. Like its congener, it does not appear to be of very general distribution in the county

## HETEROCERA (*continued*)

### *BOMBYCES* (continued)

Asteroscopus sphinx, Hufn.; A. cassinea, Hübn. (x). Given as occurring within the county in Stainton, *Man.* i, 125. None of my correspondents gives it. I took the larva on elm, 23 June, 1902, at *Botvylle*

Diloba caeruleocephala, L. (ix). Abundant in May and June in the larva state on whitethorn crab, wild pear, &c. It is of universal distribution

Pygaera bucephala, L. (vi–vii). Very abundant everywhere in the larva on most forest trees. It occurs in such numbers certain seasons that it denudes the trees selected of all their leaves. The perfect insect is not nearly so common

Clostera curtula, L. (v). I have met with the larva sparingly on poplars near *Stretton House*, and on sallows at lower end of *Cudwell Pool*

— pigra, Hufn.; reclusa, Fab. (v). Not rare some years both on poplars and sallows. Some of the ♂s of this species are very small

Drepana lacertinaria, L.; lacertula, Schiff. (vi, viii). This insect appears to occur rather freely in many woods throughout the county where birches abound

— falcataria, L.; falcula, Schiff. (v, viii). The Rev. C. F. Thornewill says: 'Imago at the *Twemlows*, but not common.' It seems, however, to be one of the commonest and most widely-distributed species of this family. The larva is less restricted in its food than the other 'Hook-Tips'; it feeds on most forest trees in May and again in September

— binaria, Hufn.; hamula, Esp. (vi, viii). Found in many of the woods around *Stretton*, *Helmeth* and the *Ragleth*, &c.

— cultraria, Fab.; unguicula, Hübn. (v, viii). Of rather frequent occurrence in woods where the beech predominates. Occurs in *Tiger Hall Woods*; many parts of the *Ragleth*; woods to the left of road leading from *Little Stretton* to *Marshbrook*; *Acton Scott*, and probably most beech woods within the county [9]

Cilix glaucata, Scop.; ruffa, L.; spinula, Schiff. (v, viii). Reported from nearly all parts of the county. It flies at dusk along lanes and hedges where hawthorn and sloe, the food-plants of its larva, grow

Gonophora derasa, L. (vii). Mr. Woodforde finds this species fairly common about *Market Drayton*. It comes occasionally to sugar when spread not far from brambles (Rubus fruticosus) upon which the larva feeds. Of general distribution, though nowhere abundant in Shropshire. Recorded from *Helmeth*, *Ragleth*, and *Tiger Hall Woods*

Thyatira batis, L. (vi–vii). The distribution of this beautiful insect is similar to that of the last-named. My experience of its habits is quite opposed to that of Richard Shield, for I have never taken it at sugar, or G. derasa either, except on boisterous, windy nights

[9] All the species of the genus Drepana have the habit of flying around trees at a considerable distance from the ground in the hot sunshine; this habit has caused them to be very generally overlooked by many collectors.

HETEROCERA (*continued*)

*BOMBYCES* (continued)

Cymatophora octogesima, Hübn.; ocularis, Guén. (vi–vii). A very fine ♀ specimen of this uncommon species was taken by Dr. Bradburne at *Broseley* in June, 1896. Recorded by Mr. Carleton Rea from *Wyre Forest* 18 June, 1899, and it probably occurs in other places in the county where the aspen (Populus tremula) abounds, such as *Marn Wood*, *Astley*, &c.

— or, Fab. (vi–vii), Found occasionally on or near poplars. Recorded from *Ragleth*. Not common around *Stretton*

— duplaris, L. (vi–vii). Not at all rare among birch trees. It comes readily to sugar, even in very exposed places. Occurs in many parts of *Ragleth Wood*

— fluctuosa, Hübn. (vi). Rare. It used to occur sparingly in the low-lying part of the wood to the north of the *Ragleth*, among birch and alder; most of these trees, however, were felled two or three years ago, disturbing, if not destroying, many good species. *Wyre Forest*, 1897, 1898, 1899, pretty frequent

Asphalia diluta, Fab. (viii–ix). The larva is often obtained off oaks in June and July. It comes freely to sugar. I have taken this insect over so large an area that it is fair to infer that its distribution must be pretty general over the entire county

— flavicornis, L. (iii). Common among birch. It is fairly common about *Market Drayton*, and in most places where there are plantations of birch trees of any extent. I have seen it literally swarming on the trunks of these trees in a very exposed situation at an elevation not very far short of 2,000 ft. above sea level in North Wales, only a few miles from the Shropshire boundary. It offered some fine vars., in some few instances very close to the polar var. finmarchica, Schöyen

*NOCTUAE*

Bryophila perla, Fab. (vii, viii). Common in most parts of the county, on or near old lichen-covered walls; it comes freely to light. The larvae generally found in little companies pass the winter and feed upon lichen in the spring. Mr. Woodforde gives it as common around *Market Drayton*. It is frequent in the *Stretton* district and varies a great deal both in size and colour

Acronycta leporina, L. (vi–vii). This species, so far as I can find, seems almost restricted to the more northerly parts of the county. The Rev. C. F. Thornewill reports it from the *Twemlows*, and Mr. Woodforde speaks of it as fairly common in the neighbourhood of *Market Drayton*. I met with a fine ♀ at *Church Stretton*, 23 June, 1905. Recorded by Mr. Carleton Rea from *Wyre Forest*, 10 June, 1899

— tridens, Schiff. (vi). Often, I fancy, mistaken for A. psi and *vice versa*. The Rev. C. F. Thornewill took the larva in his garden at *Calverhall* in 1900. I have also come across it several times

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Acronycta psi, L. (vi–viii). Generally distributed throughout the county

var. suffusa, Tutt. On 20 June, 1900, I took this form in which the anterior wings are suffused with black, especially on the disk

— menyanthidis, View. (vi, vii). Not common; found in boggy parts of the *Longmynd*. It probably occurs on most of our moorlands and mosses, but wants to be worked. *Whixall Moss* is, for instance, a very likely locality

— alni, L. (vi). Generally rare. It is, I believe, much more frequent in the south-west and south-east parts of the county than in the other districts. The Rev. C. F. Thornewill took the larva in his garden on beech in August, 1897. Mr. Paddock found it on alder at *Caynton* near *Newport* in 1894. I have got it on alder, poplar, and ash, around *Stretton*. The larva seems fond of boring into the decayed wood of trees for the purpose of pupation

— megacephala, Fab. (vi, vii). Mr. Woodforde reports this insect as fairly common in his district; it is found about *Stretton* commonly wherever there are poplars (Populus nigra), and is probably of universal distribution in Shropshire. The larva spins a silken web on the upper side of the leaf of its food plant

ab. rosea, Engr. Fore-wings suffused with rosy; I have bred this beautiful form once; it appears not to be common

— rumicis, L. (v–vii). The Rev. C. F. Thornewill, speaking of this moth, says: 'One larva on *Prees Road*, Sept. 1895.' Mr. Woodforde defines it as fairly common. It is very frequent in the central part of the county, and wherever I have collected. It comes freely to sugar

ab. salicis, Curtis. Generally smaller, and much darker than the type. Found rather freely about *Church Stretton*

— ligustri, Fab. (v–vii). This does not figure in any of the lists kindly sent to me. It is not rare in the *Church Stretton* district, both as a larva and an imago, and is found on or near large ash trees. I have never come across the larva on privet. From the extended area in which I have taken this species it seems to be fairly generally distributed in the county. Recorded from *Wyre Forest*. The type of *Church Stretton* possesses no metallic green markings, but the fore-wings are strongly tinged with violet. In the western parts of Shropshire the green form is more frequent

Leucania conigera, Fab. (vi–vii). Often found about *Church Stretton*; I have repeatedly taken it in damp, swampy meadows also, at lime-blossom and at sugar. It varies somewhat in its colouring. It does not appear in any of the local lists, but has doubtless been overlooked

— lithargyria, Esp. (vii). Common in meadows and along hedge-banks. It varies much in colour and in the number of spots on fore-wings. It comes to sugar

— comma, L. (vi–vii). Of very frequent occurrence; it comes freely to sugar and to rhododendron bloom

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Leucania impura, Hübn. (vi, viii). Common at sugar, and often seen flying in damp meadows. This species, L. comma and L. pallens are the only species of this genus given in the local lists. I should have expected a long series, especially from the neighbourhood of *Ellesmere*

— pallens, L. (vi, viii). Generally abundant, especially in damp meadows. It comes readily to sugar

ab. ectypa, Boisd. Fore-wings of a reddish ochreous colour. Found occasionally with the type. I have taken it near *Shrewsbury* and at *Church Stretton*

Coenobia rufa, Haw. (vi–viii). The Rev. C. F. Thornewill, speaking of this diminutive insect, says :—'Once taken at light at *Calverhall Vicarage*, August, 1897.' I have never before heard of this species being taken in Shropshire

Tapinostola fulva, Hübn. (viii, ix). It is probable that this moth occurs in and near damp woods all over the county. Mr. Woodforde gives it as 'common but local' around *Market Drayton*. The same may be said of it at *Church Stretton*

ab. ffuxa, Treisch. Nervures of fore-wings fuscous ; found as frequently as the type about *Church Stretton*

Chortodes arcuosa, Haw. (vii). Frequent generally in damp woods and meadows in which the food of the larva (Aira coespitosa) grows

Nonagria typhae, Thunb ; arundinis, Fab. (viii, ix). Usually common among reed-mace (Typha latifolia). The Rev. C. F. Thornewill says that the larva is abundant in stems of Typha latifolia in field pits round *Calverhall*. It is found at *Soudley Pools* near *Church Stretton*

ab. fraterna, Tr. Fore-wings dark ruddy brown. With the type, but rarer

Gortyna ochracea, Hübn. (viii, ix) ; flavago, Esp. Mr. Woodforde speaks of it as scarce in the district of *Market Drayton*, not rare about *Church Stretton*. Found probably in most parts of the county. It comes to light

Hydroecia nictitans, Bork. (vii, viii). The Rev. C. F. Thornewill reports :—'Taken abundantly at light, and sometimes at sugar.' It is fairly frequent about *Church Stretton* ; it is often seen flying around thistles in the hot sunshine

ab. erysthrostigma, Haw. Reniform stigma, red. Occurs at *Church Stretton* not infrequently

— micacea, Esp. (viii, ix). The Rev. C. F. Thornewill takes it at light but less commonly than the last species. I have found it frequently at light and sugar. It varies much in tint and in size ; some specimens are very close to H. petasitis, Doubleday

Axylia putris, L.[10] (vi, vii). Mr. Woodforde has taken this insect in his neighbourhood but it is scarce. I have not found it about *Church Stretton*. Recorded from *Wyre Forest* (W. H. Edwards)

Xylophasia scolopacina, Esp. (vii–viii). This is mentioned in none of the local lists, It is, I believe, generally considered a somewhat rare and local moth. It, however, occurs rather freely in most of the woods near *Church Stretton*, in *Helmeth* and *Ragleth Woods ;* woods about *Tiger Hall* and in the grounds of *Woodcote*. I have frequently taken it on the flowers of bramble thistle, and especially on those of the field wood rush (Juncus campestris) by visiting these at night with a lantern, I have also often obtained it when 'beating' for larvae

Xylophasia hepatica, Hübn. (vi, vii). An uncommon and apparently a local insect in Shropshire. The Rev. C. F. Thornewill says of it :—'One at sugar in 1901 in *Calverhall Vicarage* garden.' I only know of three captures at *Church Stretton*, viz. :—one by Dr. Bradburne, a ♂ in 1906, and a ♀ at sugar in 1899 by myself. Recorded from *Broseley* and *Wyre Forest*

— rurea, Fab. (vi, vii). It appears to be of very general distribution as well as of frequent occurrence everywhere in the county. This species varies considerably

ab. alopecurus, Esp. ; combusta, Dup. Dark fuscous, stigmata outlined in ochreous white. It seems to be almost as frequent as the type according to the observations of the Rev. C. F. Thornewill no less than my own. One occasionally meets with forms intermediate between this and the type

— sublustris, Esp. (vi–vii). Not nearly so often seen as the following species. Mr. Potts has taken it occasionally around *Broseley*, and I have met with a few examples about *Church Stretton*. It seems not infrequently to be confounded with the following insect. *Wyre Forest* (J. Peed)

— lithoxylea, Fab. (vi, vii). This appears to be generally found throughout Shropshire, though commoner in some districts than in others. The Rev. C. F. Thornewill takes it sparingly around *Calverhall* at sugar. Mr. Woodforde defines it as fairly common. Mr. Potts comes across it about *Broseley*. It occurs most seasons near *Stretton*, but is commoner some years than others. It comes to sugar

— polyodon, L. ; monoglypha, Hübn. (vi, vii). One of our very commonest noctuae ; it swarms at sugar, and is often observed at rest. It is very subject to variation, being of every shade intermediate between light grey and black. It occurs throughout the county

ab. obscura, Tutt. Suffused with brown ; all the pale markings of the type brownish instead of whitish. Taken often by me at *Church Stretton*

ab. brunnea, Tutt. Fore-wings deep rich brown, with the discoidal spots and the usual lines visible. Not so common at *Church Stretton* as ab. obscura

ab. infuscata, Buchanan-White. Ground colour very dark, approaching black ; pale markings usually grey. This striking form occurs apparently all over the county, but is more frequent some years than others. Mr Potts has taken it at *Broseley* ; the Rev. C. F. Thornewill caught it at sugar near *Calverhall* in 1903. I have met with it several times at *Church Stretton*, and took a very dark form 3 July, 1901, and two very dark ♂s in *Woodcote*, 6 July, 1905

[10] This species is usually placed in the genus Agrotis by continental entomologists.

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Dipterygia scabriuscula, L. ; pinastri, L. (vi). Mr. Woodforde takes this species rather commonly in the neighbourhood of *Market Drayton*. It appears in one other local list of Shropshire insects. *Wyre Forest*, June, 1899 (J. Peed). Recorded from *Broseley*, 1905. It comes to sugar

Neuria reticulata, Vill.; saponariae, Bork. (vi). Very rare. I have only once come across this species in *Church Stretton*, flying in a meadow at dusk. Not a single correspondent gives it

Heliophobus popularis, Fab. The Rev. C. F. Thornewill finds it commonly at light at *Calverhall;* several ♀s taken 1901. Mr. Woodforde takes it freely. I have often found the ♀ at light

Charaeas graminis, Hübn. (vii, ix). It is common about *Calverhall*, and at *Church Stretton* and abundant both in the valleys and on the *Longmynd*, especially in damp situations. It often flies by day in the hot sunshine. It comes freely to light

Cerigo matura, Hübn ; cytherea, Fab. (vii–viii). Not uncommon at sugar in the *Stretton* district ; usually on dry banks and in stony places, at least in this neighbourhood. No mention is made of this in the other lists ; I nevertheless cannot help thinking that it is of very general distribution in such parts of the county as are suited to its habits

Luperina testacea, Hübn. (viii, ix). Appears to be common throughout the whole of Shropshire. It varies in colour and the intensity of its markings ; some specimens approach the ab. guenei of Doubleday. It comes to light

— cespitis, Fab (viii, ix). Though usually said to be rare, I have taken the insect over so great an area that it seems fair to think of it as common. The ♂ comes very freely to light. For many years I have reared this moth from larvae obtained by sweeping grass about the middle of May ; the ♀ does not come to light. It occurs rather commonly some seasons near *Market Drayton*. The Rev. C. F. Thornewill records two specimens at light, *Calverhall Vicarage*, 1898. Mr. Potts takes it around *Broseley*

Mamestra abjecta, Hübn. (vii). This species does not appear in any of the local lists. It is apparently rare in the county ; I have taken it twice only : one at rest July, 1897, the other at sugar, 6 July, 1899

— sordida, Bork. ; anceps, Hübn. (vi). Mr. Woodforde reports it as very scarce in his district. It is certainly far from common at *Church Stretton*, though I have managed to obtain a few examples, some at rest, others at sugar. Recorded from *Wyre Forest*, 18 and 24 June, 1899

— albicolon, Hübn. (v, vi). One specimen taken by myself at rest in the low-lying part of the *Ragleth*, near *Ferndale Cottage*

— furva, Hübn. (vii, viii). Mr. Potts obtains this moth near *Broseley*. It is common in the neighbourhood of *Church Stretton*, though almost restricted to the *Longmynd*. It comes to sugar, and is fond of settling on thistle-bloom at night. I have also reared it from the larva which I found at the roots of grass on the *Longmynd*. *Wyre Forest* (W. H. Edwards)

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Mamestra brassicae, L.(vi,vii). The Rev. C. F. Thornewill says it is not common at *Calverhall*. In other parts of the county it appears to be of most frequent occurrence. It varies greatly in the colour and markings of anterior wings

— persicariae, L. (vi, vii). The Rev. C. F. Thornewill, speaking of this, says : 'Two larvae in 1899 at *Calverhall*.' Mr. Woodforde finds it scarce about *Market Drayton*. At *Church Stretton* it is really scarce. *Wyre Forest*, 1899 (J. Peed)

Apamea basilinea, Fab. (vi). The Rev. C. F. Thornewill writes : 'Abundant in 1895 at flowers of rhododendron ; hardly seen since.' It is found by Mr. Potts about *Broseley* and is of frequent occurrence in the neighbourhood of *Church Stretton* on palings, tree trunks, &c.

— connexa, Bork. (vi–vii). Not entered on the other lists. I reared it once at *Church Stretton* in 1897

— gemina, Hübn. (vi, vii). The Rev. C. F. Thornewill says : 'A few taken in 1895 at flowers of rhododendron.' Mr. Woodforde reports it as fairly common in his locality. I have met with it but sparingly at *Church Stretton*, where the dark form preponderates. Mr. Potts gets this species around *Broseley*

— unanimis, Treich. (vii–viii). The Rev. C. F. Thornewill obtained this insect once in 1901. It occurs now and again in damp places about *Stretton*, but not commonly

— leucostigma, Hübn. ; fibrosa, Hübn. The Rev. C. F. Thornewill writes : 'One specimen—a striking variety—at sugar, Sept. 1896.' Though I have never 'worked' for this species, it is almost sure to be found in more than one locality here. It appears to me to be closely connected with the Hydroeciae

— didyma, Esp. ; oculea, Guén. (vii–viii). Abundant everywhere. One of the most protean of the noctuae ; it varies from light grey to intense black. Some of its vars. are very close to A. unanimis. It comes to sugar freely

Miana strigilis, Clerck. (vi, vii). Seems to be common all over the county. It flies at dusk, especially in meadows laid up for hay. This insect varies much both in size and colouring

— fasciuncula, Haw. (vi, vii). Appears to be less frequent than the last according to most correspondents. At *Church Stretton* it is commoner

— literosa, Haw. (vi, vii). Not so often found as the two preceding species. It comes to sugar

— bicoloria, Vill. ; furuncula, Trei. (vii). Less common apparently than the others of the genus

Celaena haworthii, Curt. (vii,–ix). I caught a very poor specimen some years ago on the *Longmynd* among heather, which appears to be this species, but I cannot vouch for it owing to its imperfect condition. Mr. Woodforde speaks of it as scarce about *Market Drayton*

Grammesia trigrammica, Hübn. ; G. trilinea, Bork. (vi, vii). Both Mr. Woodforde and the Rev. C. F. Thornewill speak of this as fairly common. Mr. Potts takes it about *Broseley*. I meet with it frequently at sugar and flying along hedges, &c., at dusk

ab. bilinea, Hübn. Central line absorbed in darker ground colour. Recorded from *Wyre Forest*

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Caradrina morpheus, Hübn. (vi, viii). It is scarce in the *Market Drayton* district, and found now and again in the neighbourhood of *Church Stretton* flying in meadows, &c. ; it comes also to light

— quadripunctata, Fab.; cubicularis, Bork. (vi, viii). Though generally looked upon as common, it does not appear to be of very frequent occurrence in any part of the county. In damp woods and meadows. It is attracted by light

— taraxaci, Hübn. ; blanda, Treisch. (vi, vii). Mr. Woodforde looks upon it as scarce. Mr. Potts gets it pretty freely. Not so often seen about *Church Stretton* as the following ; it has similar habits

— alsines, Brahm. (vii). Mr. Woodforde does not often obtain it ; it seems fairly common about *Broseley*. Commoner than the last about *Church Stretton*

Rusina tenebrosa, Hübn. (vi, vii). Common and appears to be of pretty general distribution. It is found on flowers after dark, and comes rather freely to sugar

Agrotis ypsilon, Rott. ; suffusa, Hübn. (ix.) All the local lists mention this insect as either scarce or uncommon. I find it at sugar, but not commonly

— saucia, Hübn. (vii–ix). Distributed over the county, but is more or less scarce everywhere. The most likely place for this species is in or near a clover field. It comes to sugar and to ivy-bloom. It appears on all the lists. *Wyre Forest* (W. H. Edwards)

— segetum, Schiff. (vi, ix). Found over the entire county commonly ; not so abundant, however, as the following. It comes to sugar. It varies greatly in intensity of colour

— exclamationis, L. (vi, viii). Abundant everywhere; it swarms at sugar, and is often flushed by day in grass land. It varies vastly both in colour and markings

— corticea, Hübn. (vii). Occurs in all probability over the greater part of Shropshire. It comes to lime-blossom and to sugar, but not very commonly. It offers some fine forms

— nigricans, L. ; fumosa, Hübn. (vii). Does not seem of frequent occurrence in this county. Mr. Potts takes it occasionally and it occurs now and then at sugar at *Church Stretton*. It varies considerably. *Wyre Forest* (Carleton Rea)

— obelisca, Hübn. (viii). I was surprised to find this insect, usually attached to the coast, in some numbers about *Church Stretton*. Found at light, at sugar, on flowers, and flying at dusk in meadows, &c. The other lists do not mention it

— tritici, L. (viii). Mr. Woodforde reports this species, usually a maritime insect, as very scarce around *Market Drayton*. *Wellington* (H. Paddock)

— cinerea, Hübn. Occasionally in *Wyre Forest*

— augur, Fab. (vi, vii). Very generally distributed, but commoner in some districts than in others. It comes freely to sugar

— obscura, Brahm. ; ravida, Hübn. (vii, viii). Occurs sparingly in many parts of the county ; I have never taken it about *Church Stretton*

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Agrotis lucernea, L.(vii). Very local. The only locality which I know for this species is at the foot of the 'Devil's Chair,' *Church Stretton*, among loose stones, where I first discovered it. It flies often in little groups over the heaps of stones, but only in the hot sunshine. It does not come to sugar, but is attracted by light. As a general rule it appears to be very partial to the coast

— praecox, L. (viii). Given as a Shropshire insect by Stainton (*Man.* i, 227). The local lists do not give it. I have never come across it at *Church Stretton*

— strigula, Thunb. ; porphyrea, Hübn. (vi, vii). Common among heather (Calluna erica), *Whixall Moss* and about *Market Drayton ;* very frequent on the summit of the *Longmynd*. It is often observed flying by day over the moorlands

Noctua plecta, L. (vi, vii). Found commonly over the entire county. It flies swiftly at dusk in damp localities, and comes readily to sugar

— c-nigrum, L. (vii, viii). Common about *Market Drayton* according to Mr. Woodforde. The Rev. C. F. Thornewill takes it occasionally at *Calverhall*. Mr. Potts finds it not infrequently around *Broseley*. It comes very sparingly to sugar at *Church Stretton*

— triangulum, Hübn. A few taken at sugar around *Calverhall* by the Rev. C. F. Thornewill. Mr. Woodforde finds it not uncommonly near *Market Drayton*. In 1899 it was not infrequent at sugar about *Church Stretton*

— stigmatica, Hübn. ; rhomboidea, Tr. (vii). Looked upon generally as rather rare ; it is, however, obtained pretty freely at *Church Stretton* by visiting thistles at night with a lantern. Found in wood to the north of the *Ragleth*, *Tiger Hall*, &c. It comes to sugar. There is no record of this in the other local lists

— brunnea, Fab. (vii). Mr. Potts finds it rather commonly around *Broseley*. It is frequent on flowers after dark, and also at sugar in the neighbourhood of *Church Stretton*. Though the other lists do not mention this species, it is, I imagine, fairly common generally in the county

— xanthographa, Fab. (viii). Appears to be ubiquitous. All the county lists mention it. At *Church Stretton* it swarms at sugar, and is flushed at every other step after dark both on the hills and in the valleys. It varies in size and in colour

ab. cohaesa, H. S. Of a uniform grey colour. Not uncommon

— baja, Fab. (vii). Common generally in the county. It is fond of settling on flowers after dark, and comes freely to sugar

— castanea, Esp. (viii). This is the typical form of this insect, in which the anterior wings are red or ruddy. It is not nearly so common as the following form. Not uncommon about *Market Drayton*

var. neglecta, Hübn. Fore-wings of a decidedly grey colour. This is the form generally found in Shropshire

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Noctua castanea (*continued*)

var. xanthe, Woodforde. In this form the usual red or grey of the fore-wings is replaced by a bright yellow. (*Trans. N. Staffs. Field Club* (1901) xxxv.) This var. seems restricted to a very small area of North Staffordshire, just outside the Shropshire boundary. The first two forms occur sparingly on the summits of the *Longmynd*

— umbrosa, Hübn. (viii). The Rev. C. F. Thornewall finds this species not uncommonly around *Calverhall;* it seems to prefer the flowers of privet (Ligustrum vulgare). Mr. Woodforde takes it pretty freely about *Market Drayton* and it is common at *Church Stretton*, especially resting on thistle bloom after dark

— dahlii, Hübn. (vii, viii). Rare ; I have taken very few examples of this insect at *Church Stretton* in damp woods. It is also taken in *Wyre Forest* (J. Peed)

— rubi, View ; bella, Bork. (vii, viii). Not so common as N. primulae. Found on thistles after dark in damp woods. It comes to sugar. Mr. Woodforde cites it as common. The Rev. C. F. Thornewill takes it abundantly at light

— primulae, Esp. ; festiva, Hübn. (vi, vii). One of the commonest species of the genus ; it comes to sugar, and flies in or near damp woods at dusk and later

var. subrufa, Haw. The space between the stigmata is of the same shade as the rest of the wing. As common as the type at *Church Stretton*

— conflua, Tr. (?), (vii). Smaller and brighter than the preceding species. Not uncommon on the summit of the *Longmynd* among heather

— depuncta, L. Not common. I have taken it now and then both at sugar and light. None of the county lists gives it

— glareosa, Esp. ; hebraica, Hübn. Not uncommon on the *Longmynd* among heather. I have obtained it also in the valleys when beating for larvae. Some of the specimens taken at *Church Stretton* are beautifully suffused with pink. Does not figure on any of the county lists

Triphaena interjecta, Hübn. (vii, viii). Mr. Woodforde says it is very scarce about *Market Drayton.* I have but seldom taken it, and always at light. It is said to fly about bramble blossom in the afternoon sun, but I have never seen it do so. Recorded from *Broseley*

— janthina, Esp. (vii, viii). The Rev. C. F. Thornewill says :—'Common, fond of hiding in ivy.' It appears to be scarce about *Market Drayton.* I get a few most years flying at dusk ; it is attracted by light

— fimbria, L. (vi, vii). Once at sugar at *Calverhall.* Mr. Woodforde returns it as common around *Market Drayton.* Not very common in the neighbourhood of *Church Stretton ;* it comes occasionally to light and sugar. It varies vastly as to the colour of anterior wings. Recorded from *Wyre Forest*

— orbona, Hüfn. ; subsequa, Hübn. (vii). A few examples of this rare species have been taken by me, chiefly on the *Longmynd* among heather

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Triphaena comes, Hübn.; orbona, Fab. (vii,viii). Very common in every part of the county ; it comes freely to sugar and light. The colour of the fore-wings is very variable. The larva is fond of hiding in crevices of bark

— pronuba, L. (vi, viii). Abundant everywhere ; it swarms at sugar, comes to light, and is often flushed in grass land, hay-fields, and strawberry-beds. The anterior wings of this insect vary through every shade from almost white to dark brown, approaching black

Trachea piniperda, Panz. (iii, iv). The Rev. C. F. Thornewill gives it as occurring on Scotch fir (Pinus Silvestris) at the *Twemlows.* It occurs in all the fir plantations about *Church Stretton.* The beautiful larva is not infrequent on those trees, especially about the middle of July. It pupates under ground, so far as my experience goes

Pachnobia leucographa, Hübn. (iii, iv). I have taken this species once only at *Church Stretton* at sallow-bloom. It appears to be very rare in this neighbourhood. *Wyre Forest,* 14 April, 1902 (Carleton Rea)

— rubricosa, Fab. (iii, iv). Common on sallows at *Calverhall.* Mr. Woodforde designates it as fairly common about *Market Drayton.* It is frequent at sallow-bloom at *Church Stretton.* It varies much in size and in the colour of fore-wings, which vary from pinkish grey to a dark rich red

Taeniocampa gothica, L. (iii, iv). This is doubtless one of the most generally distributed and common representatives of the Orthosidae. It appears on all the lists. It swarms at sugar and at sallows. It varies greatly in the colour of its fore-wings. Some of its vars. are very near to the ab. gothicina, H.S. Others again are very close to, if indeed not identical with, the Siberian var. askoldensis, Stgr., in which the anterior wings are of a violet-grey colour

— incerta, Hufn. ; instabilis, Esp. (iii, iv). Also of general occurrence throughout Shropshire. As both its names imply it is one of the most variable of the noctuae. Specimens of every shade are met with, from bone-white to dark fuscous, and from reddish-grey to a dark ruddy brown. Some of the forms are very handsome

— opima, Hübn. (iii, iv). Not apparently common. I have taken a few at sallows. The other lists make no reference to this. *Wyre Forest.* (P. W. Abbott)

— populeti, Treisch. (iii, iv). A few have occurred at odd intervals at sallow-bloom at *Church Stretton.* The other county lists do not mention this species

— munda, Esp. (iii, iv). Common at sugar and sallows. Mr. Woodforde says that this is scarce with him, but it seems fairly common in all the other parts of Shropshire. It comes to sugar

ab. immaculata, Staudinger. Black spots on fore-wings wanting. Once reared at *Church Stretton* by myself (1893)

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Taeniocampa gracilis, Fab. (iii, iv). Fairly common around *Stretton*, and is also frequent near *Market Drayton*; it comes occasionally to sallows. The Rev. C. F. Thornewill takes it occasionally at sallow-bloom. Recorded from *Wyre Forest*

— stabilis, View. (iii, iv). Seems to be very common in all parts of Shropshire, both at sugar and sallows. Though named 'stabilis' it varies to a wonderful extent in size, colour, and markings

— miniosa, Fab. (iii, iv). I have only taken this species once at *Church Stretton*, namely, in the spring of 1897. *Wyre Forest* (W. H. Edwards)

— pulverulenta, Esp; cruda, Treisch. (iii, iv). This is certainly the commonest and most widely distributed member of this genus and occurs everywhere in the county. It varies both in the intensity of its markings and also in colour. Some of the ruddy forms very nearly approach T. miniosa

Orthosia fissipuncta, Haw.; upsilon, Bork. (vii). Frequent in damp places among willows, around which it is often seen flying at dusk

— lota, Clerck (ix, x). Not nearly so common at *Church Stretton* as the following insect. Taken now and again at ivy-bloom and sugar. Scarce about *Market Drayton*. Not abundant at *Calverhall*

— macilenta, Hübn. (ix, x). Mr. Woodforde speaks of this species as scarce. Mr. Potts obtains it about *Broseley*. At *Church Stretton* it is the commonest insect of the genus, not only at sugar, but also at ivy-bloom

Anchocelis helvola, L.; rufina, Hübn. (ix). Both the Rev. C. F. Thornewill and I consider this species as anything but common, and have taken it at sugar very sparingly. I have also met with it at ivy-bloom. It appears on none of the other county lists. Recorded from *Wyre Forest*

— pistacina, Fab. The Rev. C. F. Thornewill says: 'Abundant some years, and very variable.' Mr. Woodforde speaks of it as scarce in his district. It is common at sugar around *Stretton*. It varies greatly

ab. serina, Esp. Anterior wings of a very light ochreous colour. I have taken this form more than once at *Church Stretton*

ab. rubetra, Esp. Fore-wings of a uniform red colour. Not uncommon about *Stretton*

ab. venosa, Curt. Nervures of a darker shade than the rest of the wing, which gives a streaky look to the insect. This form, which is not limited to any one colour, is not infrequent in the *Stretton* district. Some examples of this ab. are very beautiful

— lunosa, Haw. Not rare on many of the dry stony banks about *Stretton*. It comes very freely to light. Few moths vary more than this in markings and shade of colouring. Some are nearly black; others again are of a yellowish-buff colour. Many as its varieties are, they have apparently so far received no names in general use. The other lists do not mention this species

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Anchocelis litura, L. The most generally distributed and the commonest of the genus. All the lists give it. It comes to sugar, and is often found at rest on tree trunks and palings. So far as my experience goes it varies a great deal less than the other members of the genus

Scopelosoma satellitia, L. (x, xi). All the local lists speak of this insect as common. I have often come across the strange, restless larva. Both forms of this species appear to be equally common

Cerastis vaccinii, L. (x, xi). Seems to be very generally found all over the county. It visits both sugar and ivy-bloom. It varies in the colour and markings of fore-wings

— spadicea, Hübn. (x, xi). Perhaps not quite so common as the last-named species, though no rarity. It has similar habits

Hoporina croceago, Fab. (x–xi, iii–ivh). This rather rare and local insect occurs in *Wyre Forest* (W. H. Edwards)

Xanthia citrago, L. (viii, ix). Fairly common in the north-eastern part of the county, and abundant around *Stretton*. I have found it of frequent occurrence over a large area in places where the lime tree (Tilia europea) is cultivated. It is, in common with most of the insects of this family, often found at rest on a blade of grass. I bred this species so early as 4 August in 1894. It comes readily to sugar

— fulvago, L.; cerago, Fab. (ix). The Rev. C. F. Thornewill gives *Shavington* as a locality, though the insect is not common there; it is common around *Market Drayton*, and not rare near *Church Stretton*. It comes to sugar, and is also found at rest on grass. This must not be confounded with the Euperia fulvago, Hübn., a rather local and scarce British insect, generally called Cosmia paleacea, Esp., on the continent

ab. flavescens, Esp. The purplish markings either absent or greatly reduced; found occasionally with the type

— lutea, Ström.; flavago, Fabr.; togata, Esp.; silago, Hübn. (ix). Occurs about *Whitchurch*; common round *Market Drayton*. It is not nearly so common as X. fulvago about *Church Stretton*, where I have taken it very sparingly at sugar. It appears to be a less variable insect than the last

— aurago, Fab. (ix). The other county lists do not give this species. It occurs around *Church Stretton*, *World's End*, and *Tiger Hall Woods*, *Woodcote*, &c., among beech (Fagus silvatica). It comes to sugar, and I have taken it at light and resting on blades of grass. The ♀ lays her ova at the end of September and beginning of October on the twigs of beech. *Wyre Forest* (W. H. Edwards)

— gilvago, Esp. (ix). The Rev. C. F. Thornewill says of this insect: 'Not uncommon at sugar, and larvae among seed-vessels of wych-elm (Ulmus montana), but much scarcer than the following.' Mr. Woodforde reports it as rare about *Market Drayton*. I have taken it both at rest on trees and at sugar, generally over so large an area that it must be of almost universal distribution within the county

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Xanthia circellaris, Hufn. ; ferruginea, Esp. (ix, x). Very generally distributed in Shropshire. The Rev. C. F. Thornewill finds the larva, like the last, among seed-vessels of wych-elm. I have found it commonly feeding on beech. Abundant at ivy-bloom and sugar. The larvae of this and X. gilvago are very similar

ab. nigrovenosa, Newnham. I have twice reared specimens in which the nervures of fore-wings are black, which gives the insect a very strange appearance. This species does not appear to belong to the genus Xanthia, but rather to the Anchoceles

Cirrhaedia xerampelina, Hübn. ; centrago, Haw. (viii). 'Once at light, *Calverhall Vicarage*, August, 1900,' says the Rev. C. F. Thornewill. Dr. Bradburne also took it at light on the outskirts of *Shrewsbury* in 1893. It is not rare in certain seasons about *Church Stretton*, where it occurs in August, not September. In 1895 I got five specimens within a few hours, all clinging to grass close to the trunks of some large ash trees at *Woodcote*. But at the end of the same month in 1899 I captured four examples, three resting on ash-trunks, but the fourth clinging to a stem of grass. I have never known it come to sugar

Tethea subtusa, Fab. (vii–viii). Does not appear in the other lists. Not uncommon about *Church Stretton*. The larva is not infrequent between two leaves of poplar, which it spins together

— retusa, L. (viii–ix). Less frequent than the last ; I have found it in the larva state on aspen (Populus tremula) near *Minton*

Cosmia diffinis, L. (vii–viii). By no means common about *Church Stretton ;* found occasionally at sugar. I have also reared it from the larva

— affinis, L. (vii–viii). Rather rare about *Stretton ;* in habits it is similar to last species

— trapezina, L. (vii–viii). Of general distribution throughout the county. It varies a great deal, both in size and colour

— pyralina, View. I took one specimen only at light on the west side of the *Ragleth*, August, 1894

Eremobia ochroleuca, Esp. (vii–viii). Not common around *Church Stretton ;* found only occasionally in dry and stony places at rest on flowers

Dianthaecia nana, Rott. ; conspersa, Esp. (vi). Mr. Woodforde gives this species as scarce in the neighbourhood of *Market Drayton*

— capsincola, Hübn. (vi). Appears to be the commonest of the genus, and of general distribution

— cucubali, Furst. Not rare about *Church Stretton*. It flies over Silene, Lychnis, pinks, &c., at twilight. Some specimens are beautifully suffused with violet

— carpophaga, Bork. (vi–vii). I have but seldom taken it at *Church Stretton*, flying over rhododendron and honeysuckle

Hecatera serena, Fab. (vi, vii). The lists sent me do not mention this. It is common around *Church Stretton* at rest on palings, tree-trunks, &c.

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Polia chi, L. (viii–ix). Found often at rest on trees, fences, &c. Seems to inhabit the whole county, but not universally common. Frequent about *Church Stretton*. It varies in colour to a certain extent, but I have never come across the dark olivaceous form in this part of the county

Epunda lutulenta, Bork. Taken in *Wyre Forest*, September, 1898. (The Rev. E. C. Dobré Fox)

— viminalis, Fab. (vii). Appears to be very generally distributed in Shropshire. The larva is often found on sallow and poplar

ab. obscura, Stgr. Of a grey of so dark a shade as almost to obliterate the usual markings. I have on several occasions reared this form from larvae taken at *Church Stretton*

Miselia oxyacanthae, L. (ix, x). Apparently very common everywhere in the county. It comes freely to sugar. The larva is frequent on sloe and hawthorn in June and July

var. capucina, Mill. Much darker than the type ; the metallic-green markings are absent. I have reared some fine examples of this from larvae. Specimens intermediate between this and the type frequently occur

Agriopis aprilina, L. (ix–x). Found commonly all over the county. It comes to sugar readily. The larva is very fond of hiding itself in the crevices of oak-bark in June. I once took the larva off elm (Ulmus campestris) at a considerable distance from any oak trees. This species varies greatly in the extent of the various colours no less than in the shade of the green ; some specimens being of a light, others of a dark green. I have several times reared a blue-green, or glaucous, form

Phlogophora meticulosa, L. (vi, ix, x). Common everywhere within the county. It comes freely to sugar, and is often found at rest. This noctua varies in the extent as well as in the shade of its markings ; the green, as in Smerinthus tiliae, is often replaced by a ruddy brown colour

Euplexia lucipara, L. (vi–vii). Mr. Woodforde speaks of this species as common about *Market Drayton*. It appears to be less frequent, though not rare, in other parts of the county. It comes to sugar, and is found flying at night, especially in the neighbourhood of the common fern (Pteris aquilina)

Aplecta prasina, Fab. ; herbida, Hübn. (vi, vii). The lists sent me do not mention this species. I have taken it sparingly at rest, but never either at sugar or light. Recorded from *Wyre Forest*

— nebulosa, Hübn. (vi, vii). Doubtless the commonest and most generally distributed insect of this genus. It comes readily to sugar, and is frequently found at rest on tree-trunks, palings, &c. It varies a great deal as to shade of colouring

— tincta, Brahm. (vi–vii). Found 26, 27 June and 10 July, 1898, and also 24 June, 1899, in *Wyre Forest* (Carleton Rea)

— occulta, L. (vii). Not given in any of the county lists sent me. I took a fine specimen at sugar, 6 July, 1899

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Aplecta advena, Fab. (vi). Taken in *Wyre Forest* (W. H. Edwards)

Hadena protea, Bork. (ix). Common and generally distributed. It comes very freely to sugar, and is often found at rest on oaks. Few of the noctuae vary so much in colour and markings. Specimens are found of almost a black shade, others again of a light grey; some on the other hand are greenish or decidedly green, and occasionally one meets with a beautiful blue-green form

— glauca, Hübn (vi). Not given in any of the other lists. It is not very common in the *Church Stretton* district. I have found it now and again at rest on trees, &c., and have reared a few from larvae found on the *Longmynd* feeding on heather (Calluna erica)

— trifolii, Rott.; chenopodii, Fab. (vi, vii). Given both by Stainton (*Man. Brit. Butterflies and Moths*, i, 275), and by Newman (*Nat. Hist. Brit. Moths and Butterflies*, 416), as occurring in Shropshire. The other lists do not mention it. I have only taken it once near *Church Stretton*, at rest

— dentina, Esp. (vi, vii). Seems to be rather common over the county generally. It comes to sugar, and is often found at rest on trees, palings, &c.

ab latenai, Pierret. Much darker than the type. This form is not infrequent at *Church Stretton*

— pisi, L. (vi). Mentioned in all the county lists, and appears to be generally common. The beautiful larva is very frequent in the autumn on various shrubs and plants, but especially on the common or bracken fern (Pteris aquilina); the perfect insect, which varies a great deal in colour and markings, is not nearly so often seen

— oleracea, L. (vi, vii). Appears to be common and of general distribution throughout Shropshire; it comes freely to sugar, and is often found in the larva state

— dissimilis, Knoch; suasa, Bork; aliena, Dup. (vi). The Rev. C. F. Thornewill says: 'Common in June, 1895, at flowers of rhododendron; rarely seen since.' The other lists do not give this species. *Wyre Forest* (W. H. Edwards)

— genistae, Bork; w-latinum, Bork. (v, vi). Given only in one other list. Common in the neighbourhood of *Stretton*. It comes to sugar. Recorded from *Wyre Forest*

— contigua, Vill. (vi). Only mentioned in one of the county lists. Not common at *Church Stretton*. I have found it sparingly at rest and at sugar. Recorded from *Wyre Forest*

— thalassina, Rott. (vi–vii). Taken by the Rev. C. F. Thornewill at sugar. Mr. Woodforde obtains it not uncommonly around *Market Drayton*. I take it pretty freely at rest, at light and at sugar

— adusta, Esp. (vi–vii). The Rev. C. F. Thornewill has met with this insect at flowers of rhododendron and at sugar in his garden. It is not common about *Church Stretton*. I have taken it at sugar and at light, but only occasionally. It varies greatly

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Xylocampa areola, Esp.; lithoriza, Bork. (iii–iv). The Rev. C. F. Thornewill says of this species: 'Once at rest in *Cloverley Park*, April, 1899.' Mr. Woodforde reports it as fairly common around *Market Drayton;* at *Church Stretton* it is not infrequent in the vicinity of honeysuckle (Lonicera periclymenum)

— socia, Rott.; petrificata, Trei. (ix–x). Mr. J. Peed records this specie from *Wyre Forest*

Cloantha solidaginis, Hübn. (viii). Not mentioned in any of the other lists. I have taken it several times about *Church Stretton*, both in the valleys and on the *Longmynd*. In the former habitat the larva feeds on hawthorn (Crataegus oxyacantha), in the latter on bilberry (Vaccinium myrtillus). It comes to light readily, and is found at rest on palings and tree-trunks. It is very closely connected with the two following species

Calocampa vetusta, Hübn. (ix–x, i–iv h.). Not rare in damp marshy localities. The larva is found in May and June feeding on dock, several species of scabious and various other plants. Recorded from *Broseley*

— exoleta, L. (ix–x, i–iv h.). Fairly common about *Stretton*. It comes freely to sugar very early after hibernation. I have taken it in January when the weather was open, and have several times found the larva. The Rev. C. F. Thornewill says:—'One at sugar in vicarage garden, September, 1900.' It is also found at *Market Drayton*, *Caynton*, *Broseley*, &c., and probably all over the county

Xylina ornithopus, Rott.; rhizolitha, Fab. (ix–x, iii–iv h.). Not at all rare around *Stretton*. It is often seen at rest on fences, trees, &c., and comes readily to sugar. The other lists do not mention it

Cucullia verbasci, L. (iv–v). Common about *Stretton* in the larva state on mullein (Verbascum thapsus), on which it feeds prefectly exposed in the hot sunshine. The perfect insect is less often seen; it comes to light. I have bred this insect so late as 11 June, 1901

— chamomillae, Schiff. (vi). According to Mr. Woodforde this species is common some years around *Market Drayton*. Though I have never actually come across it as yet, there are several localities about *Stretton* where the food plant, Anthemis arvensis, grows very abundantly, and where the larva only requires to be looked for at the proper time, that is in July and early August

— umbratica, L. (v–vii). Apparently common all over the county. It hovers over the flowers of honeysuckle, valerian, pinks, &c., at twilight almost like a sphinx, and is often found at rest on posts, &c. The larva, unlike those of C. verbasci and C. chamomillae, is very retiring in its habits; it feeds at night only on various Sonchi–oleraceus, arvensis, &c., and also on lettuce in gardens

Gonoptera libatrix, L. (viii, ix, iii–v h.). Mr. Woodforde refers to this species as scarce about *Market Drayton;* in the other parts of the county it appears to be common; it comes freely to sugar, and the larva is frequent on willow and sallow

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Anarta myrtilli, L. (v, vii). The Rev. C. F. Thornewill records it as fairly common on *Whitchurch Heath* and *Whixall Moss*. It is by no means of general distribution in the county though apparently occurring wherever large tracts of heather are found. It is very common on the *Longmynd*, and flies with great rapidity over the heather in the hot sunshine

Heliodes tenebrata, Scop ; arbuti, Fab. (v–vi). Appears to be very generally distributed throughout the county, but commoner in some districts than in others. It occurs freely in the neighbourhood of *Church Stretton*, flying in the brightest sunshine in damp meadows. Often found at rest on flowers at and after sunset

Erastria fasciana, L. ; E. fuscula, Hübn. (vi–vii). Mr. J. Peed says that this local insect has been taken in *Wyre Forest*

Brephos parthenias, L. (iii–iv). This species is not frequent near *Calverhall*, but it is fairly common around *Market Drayton*. Not uncommon about *Church Stretton*, flying among birch trees in the hot sunshine

Abrostola tripartita, Hufn. ; urticae, Hübn. (vi–vii). Found apparently over the greater part of the county. It flies over Lychnis, Silene, pinks, &c. at dusk

— triplasia, L. (vi–vii). Found over a similar range of country as the last, with which it agrees in its habits

Plusia chrysitis, L. (vi–viii). Common everywhere. It flies freely over flowers in the twilight. This insect not only varies in the extent of its 'brass,' but also in the shade of the latter ; some are brassy-green, others again bronzey or 'vieil-or'

— bractea, Fab. (vii). Given by Stainton, *Man. Brit. Butterflies and Moths*, i, 306, and also by Newman, op. cit. p. 453, as occurring in Shropshire. None of the lists gives it, and I have not so far come across it. Taken by Mr. Barrett at the foot of *Benthall Edge*, flying over flowers of Epilobium angustifolium

— festucae, L. (viii–ix). This species apparently is to be met with over a great part of the county, though not commonly and is found in damp low ground and marshy meadows. It comes freely to flowers. The larva doubles up the leaves of Iris pseudacorus—yellow iris—within the folds of which it spins a white cocoon, which reminds one of a spider's web. *Wyre Forest* (Dr. C. Hastings)

— jota, L. (iota) (vi–vii). Occurs all over the county, and is much commoner some seasons than others ; it flies over flowers at twilight. I have often reared this insect. The gold spots on disc of fore-wings vary greatly in size

— pulchrina, Haw. (vi–vii). Seems very generally distributed over the county like the last, with which it agrees in its habits, and with which it was formerly confounded

— gamma, L. (vi–x). Common generally. Not nearly so abundant about *Stretton* as I have seen it in other places. A very large, light coloured form, which may well be a distinct species, is found on the *Longmynd*

HETEROCERA (*continued*)

*NOCTUAE* (continued)

Plusia interrogationis, L. (vi–vii). The other lists do not record this insect. Not very common in the neighbourhood of *Stretton*. Dr. Bradburne and I have taken a few at flowers

Amphipyra tragopoginis, L. (vii–ix). Seems very common throughout Shropshire ; it comes freely to sugar, and is very fond of hiding in out-houses, behind shutters, &c.

— pyramidea, L. (vii). Not mentioned in any of the other lists. It is not rare about *Church Stretton ;* often found at sugar

Mania typica, L. (vi). Mr. Woodforde gives this insect as fairly common about *Market Drayton*. The other lists do not mention it. About *Church Stretton* it is of frequent occurrence at light and sugar. It varies much in size

— maura, L. (vii–viii). Both the Rev. C. F. Thornewill and Mr. Woodforde treat this species as rather scarce. About *Stretton* it turns up in numbers at sugar, and is easily attracted by light and often enters houses

Euclidia mi, Clerk (vi). Very common around *Stretton* in rough unbroken ground and in clover fields ; it flies with great rapidity in the hot sunshine. I have often taken the larva after sun-down clinging to a blade of grass. It appears, however, to be either absent from, or scarce in many localities

— glyphica, L. (vi). Not so common as E. mi in the *Stretton* district, and more restricted in its localities. In the western part of the county I have taken E. glyphica freely, though I have never even seen E. mi with which it agrees in its habits

Phytometra viridaria, Clerck ; laccata, Scop ; aenea, Hübn. (vi–vii). The Rev. C. F. Thornewill says :—'Common at the *Twemlows*, in sunny places on heath.' Mr. Woodforde finds it pretty frequently in his district. About *Stretton* it is common some years in unbroken ground ; rough ground above *Staley's Cottage*, and at entrance to *Ashes Valley* on the *Ragleth*, &c.

*DELTOIDES*

Hypena proboscidalis, L. (vi–vii). Common and of very general distribution over the county ; it flies about nettles at twilight

— rostralis, L. *Wyre Forest* (W. H. Edwards)

Hypenodes costaestrigalis, Steph. (vii). Local ; Mr. Woodforde gives it as rather common about *Market Drayton*. The larva will eat the leaves of thyme freely in captivity

Herminia tarsipennalis, Treisch (vi–vii). Mr. Woodforde takes it sparingly in his district. It is not rare in many of the woods about *Stretton* flying after sunset. *Wyre Forest* (W. H. Edwards)

— nemoralis, Fab. ; grisealis, Hübn. (vi–vii). Common in many of the damp woods in the county. The Rev. C. F. Thornewill reports it as uncommon at the *Twemlows*. It occurs in many of the damp *Stretton* woods. *Wyre Forest* (W. H. Edwards)

HETEROCERA (*continued*)

*GEOMETRAE*

Ourapteryx sambucaria, L. (vii), Common apparently everywhere in the county. One often notices it flying wildly at dusk along hedgerows and in lanes. The larva which feeds up to late autumn, is found on a great many trees and shrubs such as oak, elder, bramble, ivy, &c.

Epione apiciaria, Schiff. (vii–ix). Occurs more or less commonly over the entire county. It is attracted by light. It should be looked for where alders, poplars, or willows grow

— advenaria, Hübn. (vi). Taken by Mr. Carleton Rea in *Wyre Forest*

Rumia luteolata, L. ; crataegata, L. (v–ix). One of the best distributed of the Geometrae ; it seems to be very abundant everywhere during fine weather. It flies in lanes, along hedges, etc., at twilight

Venilia maculata, L. (v–vi). Though very abundant around *Stretton*, the name does not occur in any of the local lists, except in that of Mr. Thompson for the neighbourhood of *Ellesmere*. It flies in the brightest sunshine in and near woods

Angerona prunaria, L. (vi–vii). Mr. Carleton Rea takes this species in *Wyre Forest*

Metrocampa margaritata, L. (vii). The Rev. C. F. Thornewill says, '*Calverhall* occasionally.' It is very common near *Stretton* in and around woods ; it flies after sunset. It varies much in size. The larva carries on its sides fleshy filaments which remind one of the larvae of Gastropacha and Catocala

Ellopia prosapiaria, L. ; fasciaria Schiff. (vi–vii). The Rev. C. F. Thornewill gives the *Twemlows* as a locality for this species ; it is not common. Found now and again around *Stretton* in fir woods. The larva feeds on Pinus silvestris, and pupates late in spring at the roots of this tree

Eurymene dolobraria, L. (vi). Taken by Mr. Carleton Rea in *Wyre Forest* on 18 June, 1896, 6 June, 1897, and 25 June, 1899

Pericallia syringaria, L. (vii). This species is given in all the lists. It flies in woods and gardens at twilight. I have taken its strange larva on wild cherry (Prunus avium)

Selenia bilunaria, Esp. ; illunaria, Hübn. (iii–iv, vii). Appears to be of frequent occurrence in the county. It is found at rest on trees, and comes freely to light. The insects of the spring brood are much larger than those found in summer

— lunaria, Schiff. (vi). The other lists do not give this species. It occurs about *Stretton* but not nearly so commonly as the last-named It is single-brooded

Odontoptera bidentata, Clerck. (vi). Very common all over the county. It is often found at rest on tree-trunks

Crocalis elinguaria, L. (viii). The Rev. C. F. Thornewill does not give this insect ; it appears, however, to be common in Shropshire. It flies at evening over flowers, and is often found at rest on palings, etc.

Ennomos quercinaria, Hufn ; angularia Bork. (viii–ix). The Rev. C. F. Thornewill takes this species occasionally at light. Not uncommon certain seasons in or near woods in the *Stretton* district

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Ennomos fuscantaria, Haw. (viii–ix). Not given in the other lists. It occurs sparingly around *Stretton ;* it comes to light

— erosaria, Hübn. (viii–ix). Mr. Woodforde gives this insect as scarce around *Market Drayton.* I have only once taken it at light, 7 September, 1899

— alniaria, L. ; canaria, Hübn. ; tiliaria, Bork. (viii–ix). Found not uncommonly about *Stretton ;* it comes freely to light. This species, usually named E. tiliaria by British collectors, must not be confounded with the E. alniaria of Hübner, which is the E. autumnaria of Werneburg ; this latter is larger, of a paler yellow, with the minor teeth of the wings more pronounced, and is a great rarity in Britain. I have often reared it from foreign larvae

Himera pennaria, L. (x–xi). Seems well distributed and common generally over the county ; it varies greatly as to size. It is very readily attracted by light

Phigalia pedaria, Fab. ; pilosaria Hübn. (i–iii). One of the earliest of the Macros ; both the ♂ and the apterous ♀ are frequently observed at rest on tree-trunks, fences, etc.

Nyssia hispidaria, Fab. (ii–iii). The Rev. C. F. Thornewill reports it as rare in *Cloverley Park*, at rest on oaks. About *Stretton* I have reared a few from larvae ; it is not common

Biston hirtaria, Clerck. (iv–v). Found occasionally on tree-trunks in *Helmeth* and *Ragleth* woods. The other lists do not give this insect

Amphidasis strataria, Hufn. ; prodromaria, Schiff. (iii–iv). Appears to be found sparingly all over the county. It is apparently more plentiful some seasons than others

— betularia, L. (v–vi). Frequently found at rest on forest trees throughout Shropshire. It varies a great deal as to depth of colour

ab. doubledayaria, Mill. All the wings of a sooty black. Mr. G. H. Paddock has taken it at *Caynton*, near *Newport.* The Rev. C. F. Thornewill says :—'Larvae found at *Calverhall* several times produced black forms.' Common around *Market Drayton.* I have both bred this form and got the imago at *Church Stretton*

Hemerophila alruptaria, Thunb. (v–vi). Appears to be scarce in the *Market Drayton* district, but commoner both at *Calverhall* and *Church Stretton.* It comes to light

Cleora lichenaria, Hufn. (vii). Not scarce ; found at rest on various trees, especially when covered with lichen, upon which the larva feeds

Boarmia repandata, L. (vi–vii). Very common over the greater part of the county ; it often comes to light, and is frequently met with at rest on palings, &c.

— gemmaria, Brahm ; rhomboidaria, Hübn. (vi–vii). Not very common about *Calverhall*, but more frequent around *Market Drayton* and *Stretton.* Common in most gardens ; it comes to light

— roboraria, Schiff. (vi–vii). Not frequent about *Stretton.* Found occasionally at rest on forest trees. I have met with it once or twice on *Ragleth* and in the *Helmeth*, 12 July, 1901 ; *Wyre Forest*, 9 and 14 July, 1899 (Carleton Rea)

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Tephrosia crepuscularia, Hübn. (iv–v). The other lists do not mention this species. Fairly plentiful in many of the woods about *Stretton* at rest on tree-trunks

— biundularia, Bork ; bistortata, Goeze (iv–v). The Rev. C. F. Thornewill says : *Calverhall* and *Twemlows*, at rest.' The other lists do not give this insect

— punctularia, Hübn. (v–vi). Occurs now and then in the woods about *Stretton*, at rest on tree-trunks ; *World's End* and *Ragleth Woods*

Gnophos obscuraria, Hübn. (vii–viii). Used to occur frequently along the Lover's Walk, *Church Stretton*, before it was converted into 'Madeira Avenue.' It is attracted by light

Pseudoterpna pruinata, Hufn ; cythisaria, Schiff (vii). Apparently not common in the *Market Drayton* district. I have met with it on the rough ground between *Staley's Cottage* and *Little Stretton* at rest on grass ; it flies, too, by day

Geometra papilionaria, L. (vii). Mr. Woodforde speaks of this species as fairly common about *Market Drayton*. It is not rare at *Stretton*, and is found flying in the evening in the neighbourhood of birch and alder trees, upon which the larva feeds. I met with this insect in a perfectly fresh condition so late as 13 August, 1894, in the *Ragleth Wood*. Recorded from *Wyre Forest*

Iodis lactearia, L. ; aeruginaria, Hübn. (vi–vii). This insect is common around *Calverhall*. About *Stretton* it is not scarce in woods where the birch (Betula alba) is common ; occurs in *Ragleth Wood*

Phorodesma pustulata, Hufn ; bajularia, Schiff (vi). Taken in *Wyre Forest*, 25 June, 1896, by Mr. Carleton Rea

Hemithea strigata, Mül. ; aestivaria, Hübn. ; vernaria, Esp. ; thymiaria, Guén. (vi–vii). Given by Mr. Woodforde as scarce about *Market Drayton*. I have not noticed it about *Stretton*

Ephyra punctaria, L. (v, viii). Very frequent about *Stretton* in oak woods. The other lists do not give it

— omicronaria, Hübn. ; annulata, Schulze (v, viii). Often seen in the vicinity of maple (Acer campestre) on which its larva feeds

— pendularia, Clerck (v, viii). Not uncommon in many of the woods around *Stretton*, in which birch trees are found

Asthena luteata, Schiff (vi). Frequent in woods about *Stretton*, where alder (Alnus glutinosa) grows

— candidata, Schiff (vi). The Rev. C. F. Thornewill says : 'Once at *Shavington*.' It occurs at *Stretton* in many of the woods. The larva is found on hazel (Corylus avellana)

— testaceata, Don ; sylvata, Hübn. (vi, vii). Not at all rare in woods planted with alders

— blomeri, Curt. (vi). Given by Mr. Woodforde as common on the *Wrekin* on wych elm (Ulmus montana)

Acidalia dimidiata, Hufn. ; scutulata, Bork. (vi, vii). Rather common ; often found at rest on tree-trunks, posts, &c. Larva found on Pimpinella saxifraga. Mr. Woodforde finds it at *Market Drayton*

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Acidalia bisetata, Hufn. (vi, vii). Appears to be very generally distributed in the county ; it is found in meadows

— irregularia, Hufn. ; seriata, Shrank ; incanaria, Hübn. (vi, viii). Common around *Stretton*, among Polygonum aviculare

— remutaria, Hübn. (v, vii). Very frequent in meadows, and seems very generally distributed

— immutata, L. (vi, vii). Given as very common about *Market Drayton* by Mr. Woodforde

— imitaria, Hübn. (vii–viii). Mr. Woodforde reports this insect as scarce in his district. The larva feeds on broom (Cytisus scoparius)

— adversata, L. (vi–vii). Found apparently over the whole of the county. Very common in damp places

Timandra amata, L. ; amataria, L. (vi, vii). The Rev. C. F. Thornewill reports, '*Calverhall* occasionally; larva once found in *Cloverley Park*.' Mr. Woodforde speaks of this species as rare around *Market Drayton*. I have never met with it at *Stretton*

Cabera pusaria, L. (v, viii). Seems to occur freely in all parts of the county. Common at *Stretton* in many of the woods. It flies freely at dusk, and less frequently by day

— exanthemata, Scop. (v, viii). Less widely distributed than the last-named, and not quite so common. It agrees with C. pusaria in its habits. Both the Rev. C. F. Thornewill and Mr. Woodforde give this species

— rotundaria, Haw. (v). Mr. Woodforde gives this —one of our most local species—as rare about *Market Drayton*

Corycia punctata, Treisch. (v, vi), Common in the *Helmeth* and *Ragleth Woods* in the vicinity of wild cherry trees

Macaria liturata, Clerck. (vii). '*Twemlows*, not common' (Rev. C. F. Thornewill). I have fouud it not infrequently among fir trees in the neighbourhood of *Church Stretton*

Halia wauaria L. ; wavaria, Fab. (v, vii). Seems to be found everywhere in the county, in gardens where the gooseberry (Ribes grossularia) and the red currant (ribes rubrum) are cultivated

Strenia clathrata, L. (v, vi). Common around *Church Stretton* in rough, unbroken ground and in clover fields ; it flies by day. The other lists do not give this species

Lozogramma petraria, Hübn, (v, vi). The Rev. C. F. Thornewill records it from *Hawkstone*, *Twemlows*, and *Shavington*, abundant. Occurs in *Wyre Forest*

Numeria pulveraria, L. (vi). 'Once in *Calverhall Vicarage* garden and once on *Prees Road*' (Rev. C. F. Thornewill). Found not infrequently around *Church Stretton*, near sallows on which the larva feeds

Scodiona belgiaria, Bork. ; belgaria, Hübn. (vi). *Whixall Moss ;* at rest on bare ground (Rev. C. F. Thornewill). Found occasionally on the *Longmynd* among heather (Calluna erica) upon which the larva feeds

Fidonia atomaria, L. (v, vii). Seems common all over the county wherever there is unbroken waste land. Common on the *Longmynd;* above *Staley's Cottage*, &c., &c. It flies in the hot sunshine

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Fidonia piniaria, L. (v–vi). Very generally distributed over the county. It flies around fir-woods in the hot sun

Aspilates strigillaria, Hübn. (vi). Mr. Carleton Rea records the capture of this species in *Wyre Forest* on 7 June, 1895, and 17 and 19 June, 1899

Abraxas grossulariata, L. Abundant everywhere, both in gardens and along hedges ; it flies lazily by day when disturbed, but with more vigour towards evening. It varies vastly, some specimens being very light, others very dark

— sylvata, Scop ; ulmata, Fab. (vi). Mr. Woodforde says : 'Fairly common on *Wrekin*.' About *Stretton* it is common at *World's End Wood*. I have reared the imago from larvae found on elm (Ulmus campestris)

Lomaspilis marginata, L. (v–vii). Common about *Stretton* in woods and along hedges where sallows—the food plant of the larva—are common. The other lists do not give this

Hybernia rupicapraria, Hübn. (i, ii). Common in all parts of the county among sloe and hawthorn

— leucophaearia, Schiff. (ii, iii). Frequent among oaks over the greater part of the county

— aurantiaria, Esp. (x, xi). Very common in and near woods around *Stretton*, among birch and oak

— marginaria, Bork. ; progemmaria, Hübn. (ii, iii). Generally distributed. Common along hedges

— defoliaria, Clerk (x, xi). Common over the whole county, especially in the larva state. This latter is often seen crawling up oak trees in June

Anisopteryx aescularia, Schiff. (iii, iv). Fairly common throughout the county, at rest on tree-trunks, fences, &c. The ♂ flies in the evening along hedges

Cheimatobia brumata, L. (x, xii). Only too common in most parts of the county, as the larva is often very destructive to fruit trees. It also frequents hedges, the larva also feeding on sloe (Prunus spinosa) and hawthorn (Crataegus oxyacantha)

— boreata, Hübn. (x). Not nearly so generally distributed as the last-named. It is more a wood species, as the larva feeds on birch

Oporabia dilutata, Bork. (x). Appears very generally distributed over the county, along hedges, &c.

— filigrammaria, H. S. (ix). Not rare on the *Longmynd* among heath and bilbery. It flies at dusk

Larentia didymata, L. (vi, vii). Common at *Calverhall* (Rev. C. F. Thornewill). It is frequent about *Stretton*

— multistrigaria, Haw. (iii, iv). Mr. Woodforde speaks of this species as fairly common. Frequent at *Church Stretton* among lady's bedstraw (Galium verum)

— caesiata, Lang. (vi, vii). Found among heather—the food of the larva—on the *Longmynd*

— olivaria, Dup. (vii). Frequent generally around *Stretton*, on dry banks among Galium

— viridaria, Fab. ; pectinaria, Knoch ; miaria, Bork. (vi, vii). Seems to occur wherever the food plants of the larva, Galium mollugo and Galium sexatile, grow

Emmelesia affinitata, Steph. (vi, vii). Once taken at *Calverhall* (Rev. C. F. Thornewill). It is fairly common about *Church Stretton* in and near woods among various Lychnites

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Emmelesia alchemillata, L. (vi, vii). Once taken at light at *Calverhall* by the Rev. C. F. Thornewill. It is scarce about *Market Drayton* according to Mr. Woodforde. Common about *Stretton* among red hemp nettle (Galeopsis ladanum)

— albulata, Schiff. (vi). The Rev. C. F. Thornewill records it from *Prees Road* and the *Twemlows*. Common in meadows. Mr. Woodforde finds that it is common but local

— decolorata, Hübn. (vi, vii). Fairly common about *Calverhall*. Like the last, Mr. Woodforde finds it local but common. Not rare at *Stretton*, flying in the evening in the neighbourhood of red campion (Lichnis diurna)

Eupithecia venosata, Fab. (v, vi). Mr. Woodforde looks upon this species as scarce in the *Market Drayton* district. Around *Stretton* it is both scarce and local. Occurs now and then in woods near various species of the genus Silene. Recorded from *Tiger Hall*, *Ragleth*, and *Helmeth Woods*

— linariata, Fab. (vi, vii). Not uncommon in the neighbourhood of toad-flax (Linaria vulgaris) ; *Watling Street*, near *Little Stretton* ; rough ground above *Staley's Cottage*, &c.

— pulchellata, Steph. (v). The Rev. C. F. Thornewill reports : 'Abundant in the larva state on foxglove flowers (Digitalis purpurea) ; imago taken occasionally.' Mr. Woodforde speaks of it as fairly common. Occurs commonly in many places near *Stretton*, *Tiger Hall*, *Woodcote*, &c.

— oblongata, Thunb. ; centaureata, Fab. (vi, vii). Appears to be generally distributed. The larva feeds on the flowers of a great number of wild plants in the autumn

— subfulvata, Haw. (vii, viii). The Rev. C. F. Thornewill takes this species at light, and flying at dusk. Mr. Woodforde reports it as scarce about *Market Drayton*. The larva feeds on the seeds of milfoil (Achillea millefolium) well on into October

— castigata, Hübn. (v). Appears to be generally distributed, and in most places common. The larva is found on almost every tree, shrub, and plant in August and September

— nanata, Hübn. (v). Rather common on the *Longmynd* among heather (Calluna erica)

— vulgata, Haw. One of the most frequent of this genus, and of universal distribution in the county ; it is often found at rest on trees, palings, &c.

— fraxinata, Crewe (vi, vii). The Rev. C. F. Thornewill takes this insect at light and at rest on ash (Fraxinus excelsior)

— albipunctata, Haw ; tripunctaria, H.S. (v, vi). Fairly common about *Market Drayton*

— absinthiata, Clerck (vi, vii). Of frequent occurrence ; *Market Drayton*, *Stretton*, &c. The larva feeds on a great many wild plants

— assimilata, Guén. (v–viii). Mr. Woodforde gives this insect as common in his district

— valerianata, Hübn. (vi). The Rev. C. F. Thornewill finds this local species in the larva state at *Moreton Say* and *Cloverley*

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Eupithecia indigata, Hübn. (v–viii). Another local species which the Rev. C. F. Thornewill obtains at the *Twemlows* rather abundantly. Larva found on Pinus silvestris and Pinus abies

— exiguata, Hübn. (v, vi). Fairly common over a great part of the county

— abbreviata, Steph. (iv). Not rare about *Stretton* on oak trunks, on which tree the larva feeds. It seems somewhat rare about *Calverhall*

— tenuiata, Hübn. (vi, vii). The Rev. C. F. Thornewill finds this local species at *Shavington;* it is not common

— lariciata, Freyer (v, vi). *Cloverley Park* and *Twemlows*, but not very common (Rev. C. F. Thornewill). The larva, as the name implies, feeds on larch (Larix europea)

— rectangulata, L. (vi, vii). Mr. Woodforde speaks of this species as scarce in his neighbourhood. The larva is very common on crab blossoms and apple blossoms in orchards. The imago, though not rare, is not so often seen. Fairly common around *Church Stretton*

Lobophora sexalisata, Hübn. (vi). Not rare around *Stretton*, where I have several times taken it. It is found near sallow, the food-plant of the larva

Thera variata, Schiff.; obeliscata, Hübn. (vi–ix). Occurs apparently over the county generally in fir woods. It is out all the fine weather

— firmaria, Hübn. (vii). Appears well distributed in Shropshire, but not nearly so common as the last-named. Larva found on Pinus silvestris

Ypsipetes autumnalis, Freyer; trifasciata, Bork.; impluviata, Hübn.; literata, Don. (v, vi). Apparently generally distributed with the exception of the *Market Drayton* district

— sordidata, Fab.; elutata, Hübn. (vii–viii). Very common at *Calverhall*. Abundant on the *Longmynd* among heather (Calluna erica) and bilberry (Vaccinium myrtillus). It is also found less frequently in the valleys near alders and sallows. It flies by day

Melanthia bicolorata, Hufn.; rubiginata, Fab. (vii, viii). The Rev. C. F. Thornewill says: '*Twemlows*, and once in vicarage garden at *Calverhall*.' Mr. Woodforde reports it as scarce near *Market Drayton*. Not uncommon in the northern part of the *Ragleth* among alders

— ocellata, L. (vi, vii). Not rare at *Church Stretton* among lady's bedstraw (Galium verum). It is not common about *Market Drayton*

— albicillata, L. (vi, vii). The other lists do not give this. Found in and near many of the woods around *Stretton*, where there are bramble (Rubus fruticosus) and raspberry (Rubus idaeus)

Melanippe hastata, L. (vi–vii). Not common about *Stretton;* occasionally in woods where the birch is common

— tristata, L. (viii–ix). Not at all rare near *Stretton;* principally on the *Longmynd* among Galium mollugo

— sociata, Bork; subtristata, Haw. (v, vii). The Rev. C. F. Thornewill says: 'Common at *Twemlows*.' 'Very common about *Market Drayton*,' Mr. Woodforde reports. Common about *Stretton* where hedge bedstraw (Galium mollugo) grows

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Melanippe montanata, Bork. (v, viii). Of universal distribution and very common in woods where the primrose (Primula acaulis) is common. It flits lazily about in the daytime

— fluctuata, L. (iv, viii). One of the most abundant of the Geometrae; it is found all over Shropshire, at rest on posts in or near gardens where horse-radish (Armoracia rusticana), cabbage (Brassica napus), &c., are grown

Anticlea badiaria, Freyer (iii, iv). Appears to be well distributed and common over the county along hedges where the wild rose (Rosa canina) is found

— nigrofasciaria, Goze; derivata, Bork. (iv, v). Not nearly so common as the last-named. It is found both at *Calverhall* and *Market Drayton*. Not uncommon in the *Stretton* district

Coremia designata, Rott.; propugnata, Fab. (v, vi). Found over the whole county, but not abundantly

— ferrugata, Clerck (v, vi). Not very common anywhere in the county. At rest on palings, &c.

— unidentaria, Haw. (vi, viii). The commonest species of the genus. Often seen on dry banks, where lady's bedstraw (Galium verum) grows

Camptogramma bilineata, L. (vi, viii). With the exception of the *Market Drayton* district, this species seems to be common everywhere in the county. In and near grassy woods, and along hedges. It is often disturbed by day, and flies a short distance only to settle again almost immediately

Phibalapteryx vittata, Bork.; lignata, Hübn. (vi, viii). Mr. Woodforde says: 'Common but local.' It is found about *Stretton* occasionally in many of the lanes among Galia; in habits it is very similar to the last-named

Scotosia dubitata, L. (viii, ix). Appears to be fairly common in most parts of the county. It comes freely to light, and the Rev. C. F. Thornewill says to sugar also. It is remarkable that this species should be so common at *Stretton*, where its reputed food-plant, buckthorn (Rhamnus catharticus) is of such rare occurrence

— certata, Hübn. (v). The Rev. C. F. Thornewill takes this local insect in his garden, while Mr. Woodforde says that it is fairly common but local in his district

Cidaria siterata, Hufn.; psittacata, Haw. (ix, x). The other lists do not give this species. Found at *Stretton*, not uncommonly near woods and in lanes; the larva feeds on a great number of forest trees

— corylate, Thunb. (vi). The Rev. C. F. Thornewill takes this insect commonly at *Calverhall*. Common around *Stretton* in and near woods

— truncata, Hübn.; russata, Bork. (v–viii). Occurs, apparently, commonly over almost the whole county, and during the greater part of the fine weather; it is often found at rest, and flies freely along hedges, &c., in the evening

# INSECTS

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Cidaria immanata, Haw. (vii, ix). Found at the *Twemlows*, but not commonly. At *Church Stretton* it occurs often, both on the *Longmynd* and in the valleys

— suffumata, Hübn. (v). Of general distribution, being mentioned in all the local lists, but apparently commoner in some places than in others. It is frequent at *Church Stretton*, where its food-plant, Galium mollugo, occurs

— prunata, L.; ribesiaria, Boisd (vii, viii). Does not seem to occur everywhere. Mr. Woodforde speaks of it as scarce with him. In the neighbourhood of *Stretton* it is not uncommon in gardens where red currant (Ribes rubrum) and black currant (Ribes nigrum) are grown

— testata, L. (vii, ix). Common; appears to occur all over the county; found among poplars and sallows

— fulvata, Furst. (vii, viii). All the local lists give this species. It is found along hedges where the wild rose (Rosa canina) is common

— populata, L. (vii, viii). Found occasionally at the *Twemlows*. Mr. Woodforde takes it commonly about *Market Drayton*. It is very common on the *Longmynd* among bilberry (Vaccinium myrtillus). It flies over the heather in the evening

— dotata, L.; pyraliata, Fab. (vii, viii). This moth is found apparently all over Shropshire. This is the true C. dotata of Linnaeus, but not the C. dotata of Clerck and of most English authors, which is the C. associata of Borkhausen

— associata, Bork.; dotata, Clerck (vii). Given as fairly common around *Market Drayton* by Mr. Woodforde

Pelurga comitata, L.; chenopodiata, L. (vii). Scarce. Mr. Woodforde takes this insect around *Market Drayton*

HETEROCERA (*continued*)

*GEOMETRAE* (continued)

Eubolia cervinata, Schiff. (ix, x). Seems to occur over a large area. Mr. Woodforde finds it common but local in his district. It is not rare in the neighbourhood of *Stretton*, where it comes freely to light, and is often seen flying along hedges, &c., after dark. The larvae are frequently met with in small groups on mallow (Malva silvestris)

— limitata, Scop.; mensuraria, Schiff. (vi, viii). This species figures on all the lists as common. Very frequent at *Church Stretton* in grassy places throughout the greater part of the summer. It varies somewhat in colour in this neighbourhood

— plumbaria, Fab.; palumbaria, Bork. (vi, vii). Common on the *Longmynd* among heath (Erica tetralix), and in the valleys in places where broom (Cytisus scoparius) occurs. Very common in rough ground above *Staley's Cottage*, &c., &c.

Anaitis plagiata, L. (vi, viii). The other lists do not mention this species. It is very frequent in the neighbourhood of *Stretton* on dry, unbroken banks where St. John's wort (Hypericum perforatum) grows. One constantly 'flushes' it in rough ground above *Staley's Cottage*, the *Longmynd*, *Ragleth*, &c. It is also attracted by light

Chesias spartiata, Fuesl. (ix, x). This seems to be very generally found among broom (Cytisus scoparius). It is mentioned in all the lists

— rufata, Fab.; obliquaria, Bork. (v, viii). Mr. Woodforde gives this local species as being fairly common about *Market Drayton*

Tanagra atrata, L.; chaerophyllata, L. (v, vii). The other lists do not record this species, which is often found, however, in the vicinity of *Stretton* in grassy places; it flies in the hot sunshine, and is very fond of settling on grass stems. This year (1907) I came across a great many very diminutive specimens of this species

# ARACHNIDA

*Spiders, etc.*

There does not appear to have been hitherto either a specialist or collector of any of the groups of Arachnids in Shropshire, nor has it ever fallen to my lot to have been able to do any work there in this class myself. I have therefore been entirely dependent on the kind assistance of several naturalists resident in the county for materials for the following list; the success of these kind workers has been very satisfactory, considering the short time since they began to look spiders up; and it is not with the smallest idea of disparaging their zealous efforts to observe, in passing, that the result shows the main method by which it has been obtained; that is, that the majority of the species collected belong to those groups which come most in evidence at every turn. The collectors in fact have been naturalists (mostly entomologists) who have for the time being included spiders among the objects of their search; and the methods used by entomologists in general (excepting coleopterists) are not usually such as to produce the most exhaustive results in Arachnology. Consequently I have not come across among the 133 species of Arachnids collected a single species new to science, nor even any local form, one only (a harvestman, *Oligolophus hansenii*, Kraeplin) being a rarity. All the rest are among the common or commoner kinds to be found more or less in most districts of England.

To obtain good results among the numerous groups of the minute Linyphiinae and Erigoninae requires in a very high degree 'the eye of faith and the finger of instinct.' It should, however, be

noted that I have met with one or two isolated minute spiders of the female sex whose species, apart from the other sex, are not determinable as yet with any certainty, and which cannot therefore be referred at present to any known species.

The number of identified species of Araneidea (or true spiders) in the subjoined list is 124, out of about 550 at present included in the British List, and of harvestmen (Phalangidea) ten out of the twenty-four known British species.

The districts mostly searched for the materials I have received are Market Drayton, the Wrekin, Shrewsbury, and Broseley ; a few also have been recorded from Church Stretton and Whitchurch ; from all of these localities without a doubt a much greater return would easily be obtained by a 'specialist.' From experience in various parts of England I should always confidently expect a result of at least 220 to 250 species in any district of an ordinarily varied kind in respect to soil, situation, and aspect, with a considerable increase if the search were continued during several seasons.

My best thanks are due to the following collectors for their very kind and cordial response to my request for materials to enable me to make out any list at all of Shropshire Arachnids :— Mr. H. E. Forrest, Bayston Hill, Shrewsbury, and his little daughters ; Mr. W. J. Ingram, Science Master of the Shrewsbury Grammar School ; Mr. George Potts, Benthall House, Broseley ; Mr. F. C. Woodforde, Market Drayton ; Mr. James Cosmo Melvill, Meole Brace Hall, Shrewsbury ; the Rev. C. F. Thornewill, Calverhall Vicarage, Whitchurch ; and Mr. Martin J. Harding, Church Stretton ; all of whose initials will be found appended to the names of those species, in the list, sent to me by each of them individually.

For all information respecting systematic arrangement, nomenclature, synonyms, descriptions, and other particulars of the Arachnids below, reference may be made to the following English publications :—*A History of the Spiders of Great Britain and Ireland*, by John Blackwall (Ray Society, 1861–4) ; *Spiders of Dorset* (with an appendix containing short descriptions of those British species not yet found in Dorset), by the Rev. O. Pickard-Cambridge, M.A., published by the Dorset Natural History and Antiquarian Field Club (1879–81) ; papers on 'Spiders and other British Arachnids,' by the Rev. O. Pickard-Cambridge, M.A., &c. (being papers supplementary to 'Spiders of Dorset,' published in the *Proceedings of the Dorset Natural History and Antiquarian Field Club* (1882–1907) ; *List of British and Irish Spiders*, by the Rev. O. Pickard-Cambridge, M.A., F.R.S., &c., &c., 1–84, published by Sime & Co., Dorchester, Dorset, 1900 ; 'Monograph on the British Species of Phalangidea or Harvestmen,' by the Rev. O. Pickard-Cambridge, M.A., F.R.S., C.M.Z.S., &c., in *Proceedings of the Dorset Natural History and Antiquarian Field Club*, xi (1890) ; 'Monograph on the British Species of Phalangidea or Harvestmen,' by R. H. Meade, F.R.C.S., in *Annals and Magazine of Natural History*, June, 1855 ; 'Monograph on the British Species of Chernetidea, or False Scorpions,' by the Rev. O. Pickard-Cambridge, M.A., F.R.S., C.M.Z.S., &c., in *Proceedings of the Dorset Natural History and Antiquarian Field Club*, xiii (1892).

## ARANEIDEA

*True Spiders*

### DYSDERIDAE

Segestria, Latreille

*Segestria senoculata*, Linnaeus. Shrewsbury School (W. J. I.) ; Wrekin (F. C. W.) ; Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.)

Oonops, Templeton

*Oonops pulcher*, Templeton. Market Drayton (F. C. W.)

### DRASSIDAE

Drassus, Walckenaer

*Drassus Blackwallii*, Thor. Bayston Hill, Shrewsbury (H. E. F.) ; Shrewsbury School (W. J. I.) ; Market Drayton (F. C. W.) ; Calverhall, Whitchurch (C. F. T.)

— *cupreus*, Blackwall. Benthall House, Broseley (G. P.)

— *lapidosus*, Walckenaer. Benthall House, Broseley (G. P.)

### DRASSIDAE (*continued*)

Micaria, C. L. Koch

*Micaria pulicaria*, Sundevall. Benthall House, Broseley (G. P.)

Micariosoma, Simon

*Micariosoma festivum*, C. L. Koch. Bayston Hill, Shrewsbury (H. E. F.) ; Benthall House, Broseley (G. P.)

Clubiona, Latreille

*Clubiona terrestris*, Westring. Benthall House, Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Shrewsbury School (W. J. I.)

— *reclusa*, Cambridge. Market Drayton (F. C. W.)

— *lutescens*, Westring. Benthall House, Broseley (G. P.)

— *holosericea*, De Geer. Market Drayton (F. C. W.)

— *pallidula*, Clerck. Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Shrewsbury School (W. J. I.) ; Calverhall, Whitchurch (C. F. T.)

## DRASSIDAE (*continued*)

CLUBIONA, Latreille

*Clubiona comta*, C. L. Koch. Benthall House, Broseley (G. P.) ; Market Drayton (F. C. W.)

— *corticalis*, Walckenaer. Benthall House, Broseley (G. P.) ; Shrewsbury School (W. J. I.)

CHIRACANTHIUM, C. L. Koch

*Chiracanthium carnifex*, Fabricius. Benthall House, Broseley (G. P.)

ZORA, C. L. Koch

*Zora maculata*, Blackwall. Benthall House, Broseley (G. P.)

## DICTYNIDAE

DICTYNA, Sundevall

*Dictyna arundinacea*, Linnaeus. Broseley (G. P.) ; Betton Moss (F. C. W.)

— *uncinata*, Westring. Broseley (G. P.) ; Shrewsbury School (W. J. I.) ; Market Drayton, Betton Moss, and Wrekin (F. C. W.)

— *latens*, Fabricius. Broseley (G. P.)

AMAUROBIUS, C. L. Koch

*Amaurobius ferox*, C. L. Koch. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.)

— *similis*, Blackwall. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Calverhall, Whitchurch (C. F. T.) ; Church Stretton (Martin J. Harding)

— *fenestralis*, Stroem. Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Shrewsbury School (W. J. I.) ; Market Drayton (F. C. W.) ; Bury Walls, Shrewsbury, and Wrekin (F. C. W.)

## AGELENIDAE

COELOTES, Blackwall

*Coelotes atropos*, Walckenaer. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Wrekin (F. C. W.)

ARGYRONETA, Latreille

*Argyroneta aquatica*, Latreille. Meole Brace Hall, Shrewsbury (J. M.)

TEGENARIA, Latreille

*Tegenaria atrica*, C. L. Koch. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.)

— *derhamii*, Scopoli. Broseley (G. P.) ; Calverhall, Whitchurch (C. F. T.) ; Church Stretton (M. J. H.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Shrewsbury School (W. J. I.) ; Market Drayton (F. C. W.)

— *silvestris*, C. L. Koch. Broseley (G. P.) ; Market Drayton (F. C. W.)

## HAHNIIDAE

TEXTRIX, Sundevall

*Textrix denticulata*, Olivier. Bayston Hill, Shrewsbury (H. E. F.)

HAHNIA, C. L. Koch

*Hahnia montana*, Blackwall. Wrekin (F. C. W.)

## THERIDIIDAE

THERIDION, Walckenaer

*Theridion sisyphium*, Clerck. Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Market Drayton and Betton Moss (F. C. W.) ; Calverhall, Whitchurch (C. F. T.)

— *vittatum*, C. L. Koch. Calverhall, Whitchurch (C. F. T.) ; Broseley (G. P.)

— *denticulatum*, Walckenaer. Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Market Drayton (F. C. W.) ; Shrewsbury School (W. J. I.)

— *varians*, Hahn. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Calverhall, Whitchurch (C. F. T.) ; Shrewsbury School (W. J. I.) ; Market Drayton and Betton Moss (F. C. W.)

— *pictum*, Hahn. Calverhall, Whitchurch (C. F. T.)

— *tepidariorum*, C. L. Koch. Broseley (G. P.)

— *bimaculatum*, Linnaeus. Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Shrewsbury School (W. J. I.)

— *pallens*, Blackwall. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Wrekin (F. C. W.) ; Calverhall, Whitchurch (C. F. T.)

PHYLLONETHIS, Thorell

*Phyllonethis lineata*, Clerck. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Market Drayton (F. C. W.) ; Meole Brace Hall, Shrewsbury (J. M.)

STEATODA, Sundevall

*Steatoda bipunctata*, Linnaeus. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Shrewsbury School (W. J. I.) ; Market Drayton (F. C. W.) ; Calverhall, Whitchurch (C. F. T.) ; Church Stretton (M. J. H.) ; Meole Brace Hall, Shrewsbury (J. M.)

ROBERTUS, Cambridge

*Robertus* (*Pedanosthethus*) *lividus*, Blackwall. Broseley (G. P.)

TAPINOPA, Westring

*Tapinopa longidens*, Wider. Market Drayton (F. C. W.) ; Broseley (G. P.)

DRAPETISCA, Menge

*Drapetisca socialis*, Sund. Broseley (G. P.)

STEMONYPHANTES, Menge

*Stemonyphantes lineatus*, Linnaeus. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.).

LINYPHIA, Latreille *ad partem*, Blackwall and Cambridge *ad partem* and *Neriene*, Blackwall *ad partem*

*Linyphia insignis*, Blackwall. Wrekin (F. C. W.)

— *montana*, Clerck. Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Market Drayton (F. C. W.) ; Calverhall, Whitchurch (C. F. T.) ; Church Stretton (M. J. H.)

— *triangularis*, Clerck. Broseley (G. P.) ; Wrekin (F. C. W.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Calverhall, Whitchurch (C. F. T.) ; Church Stretton (M. J. H.)

— *peltata*, Wider. Broseley (G. P.)

— *pusilla*, Wider. Market Drayton (F. C. W.)

— *hortensis*, Sundevall. Broseley (G. P.)

— *clathrata*, Sundevall. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.)

THERIDIIDAE (*continued*)

LABULLA, Simon

*Labulla thoracica*, Wider. Bayston Hill, Shrewsbury (H. E. F.); Broseley (G. P.); Bury Walls, Shrewsbury and Wrekin (F. C. W.)

LEPTYPHANTES, Menge

*Leptyphantes minutus*, Blackwall. Broseley (G. P.); Church Stretton (C. F. T.); Shrewsbury School (W. J. I.); Market Drayton and Wrekin (F. C. W.)

— *nebulosus*, Sundevall. Bayston Hill, Shrewsbury (H. E. F.); Broseley (G. P.); Market Drayton (F. C. W.)

— *leprosus*, Ohlert. Broseley (G. P.); Market Drayton (F. C. W.)

— *terricola*, C. L. Koch. Broseley (G. P.)

— *blackwallii*, Kulczynski. Broseley (G. P.)

— *pallidus*, Cambridge. Bury Walls, Shrewsbury and Wrekin (F. C. W.)

— *tenuis*, Blackwall. Bayston Hill, Shrewsbury (H. E. F.); Broseley (G. P.); Shrewsbury School (W. J. I.); Wrekin and Market Drayton (F. C. W.)

— *ericaea*, Blackwall. Broseley (G. P.)

— *flavipes*, Blackwall. Broseley (G. P.)

BATHYPHANTES, Menge

*Bathyphantes concolor*, Wider. Broseley (G. P.)

— *dorsalis*, Wider. Market Drayton (F. C. W.)

TMETICUS, Menge

*Tmeticus abnormis*, Blackwall. Broseley (G. P.)

— *bicolor*, Blackwall. Market Drayton (F. C. W.)

MICRONETA, Menge

*Microneta rurestris*, C. L. Koch. Wrekin and Bury Walls, Shrewsbury (F. C. W.); Broseley (G. P.); Bayston Hill, Shrewsbury (H. E. F.)

— *saxatilis*, Blackwall. Bayston Hill, Shrewsbury (H. E. F.)

MASO, Simon

*Maso sundevallii*, Westring. Broseley (G. P.); Wrekin (F. C. W.)

GONGYLIDIUM, Menge

*Gongylidium graminicolum*, Sundevall. Calverhall, Whitchurch (C. F. T.)

— *rufipes*, Sundevall. Broseley (G. P.)

— *fuscum*, Blackwall. Shrewsbury School (W. J. I.)

— *apicatum*, Blackwall. Bayston Hill, Shrewsbury (H. E. F.)

— *dentatum*, Wider. Betton Moss (F. C. W.); Broseley (G. P.)

ERIGONE, Savigny

*Erigone dentipalpis*, Wider. Market Drayton (F. C. W.); Broseley (G. P.)

— *atra*, Blackwall. Wrekin and Market Drayton (F. C. W.); Church Stretton (M. J. H.); Bayston Hill, Shrewsbury (H. E. F.)

NERIENE, Blackwall

*Neriene rubens*, Blackwall. Broseley (G. P.)

— *rubella*, Blackwall. Market Drayton (F. C. W.)

ENIDIA, F. P. Smith (DICYPHUS, Menge)

*Enidia bituberculatum*, Wider. Meole Brace Hall, Shrewsbury (J. M.)

THERIDIIDAE (*continued*)

DIPLOCEPHALUS, Bertkau

*Diplocephalus cristatus*, Blackwall. Bayston Hill, Shrewsbury (H. E. F.); Broseley (G. P.)

POCADICNEMIS, Simon

*Pocadicnemis pumilus*, Blackwall. Shrewsbury School (W. J. I.)

TROXOCHRUS, Simon

*Troxochrus hiemalis*, Blackwall. Bury Walls, Shrewsbury (F. C. W.)

## MIMETIDAE

ERO, C. L. Koch

*Ero thoracica*, Wider. Market Drayton (F. C. W.)

## EPEIRIDAE

TETRAGNATHA, Latreille

*Tetragnatha extensa*, Linnaeus. Meole Brace Hall, Shrewsbury (J. M.)

— *solandrii*, Scopoli. Broseley (G. P.); Market Drayton (F. C. W.)

PACHYGNATHA, Sundevall

*Pachygnatha degeerii*, Sundevall. Bayston Hill, Shrewsbury (H. E. F.); Broseley (G. P.); Shrewsbury School (W. J. I.); Wrekin, Bury Walls, Shrewsbury and Market Drayton (F. C. W.); Meole Brace Hall, Shrewsbury (J. M.)

— *clerckii*, Sundevall. Broseley (G. P.)

META, C. L. Koch

*Meta segmentata*, Clerck. Broseley (G. P.); Shrewsbury School (W. J. I.); Market Drayton, Wrekin and Bury Walls, Shrewsbury (F. C. W.); Bayston Hill, Shrewsbury (H. E. F.); Church Stretton (M. J. H.); Calverhall, Whitchurch (C. F. T.); Meole Brace Hall, Shrewsbury (J. M.)

— *merianae*, Scopoli. Broseley (G. P.); Calverhall, Whitchurch (C. F. T.)

EPEIRA, Walckenaer

*Epeira diadema*, Clerck. Bayston Hill, Shrewsbury (H. E. F.); Broseley (G. P.); Shrewsbury School (W. J. I.); Betton Moss (F. C. W.)

— *pyramidata*, Clerck. Broseley (G. P.)

— *cucurbitina*, Clerck. Shrewsbury School (W. J. I.); Bayston Hill, Shrewsbury (H. E. F.); Betton Moss (F. C. W.); Calverhall, Whitchurch (C. F. T.)

— *quadrata*, Clerck. Market Drayton (F. C. W.)

— *umbratica*, Clerck. Shrewsbury School (W. J. I.); Bayston Hill, Shrewsbury (H. E. F.); Church Stretton (M. J. H.)

— *cornuta*, Clerck. Betton Moss (F. C. W.)

ZILLA, C. L. Koch

*Zilla x-notata*, Clerck. Bayston Hill, Shrewsbury (H. E. F.); Church Stretton (M. J. H.); Market Drayton (F. C. W.); Calverhall, Whitchurch (C. F. T.); Broseley (G. P.); Shrewsbury School (W. J. I.)

— *atrica*, C. L. Koch. Broseley (G. P.); Betton Moss (F. C. W.); Church Stretton (M. J. H.); Calverhall, Whitchurch (C. F. T.)

# SPIDERS

## THOMISIDAE

Xysticus, C. L. Koch

*Xysticus cristatus*, Clerck. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Shrewsbury School (W. J. I.) ; Market Drayton (F. C.W.)

— *lanio*, C. L. Koch. Broseley (G. P.) ; Market Drayton (F. C. W.)

— *erraticus*, Blackwall. Market Drayton (F. C.W.)

Oxyptila, Simon

*Oxyptila praticola*, C. L. Koch. Broseley (G. P.)

Philodromus, Walckenaer

*Philodromus aureolus*, Clerck. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Market Drayton (F. C. W.) ; Meole Brace Hall, Shrewsbury (J. M.)

— *praedatus*, Cambridge. Shrewsbury School (W. J. I.)

— *dispar*, Walckenaer. Broseley (G. P.) ; Bayston Hill, Shrewsbury (H. E. F.)

## PISAURIDAE

Pisaura, Simon

*Pisaura mirabilis*, Clerck. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Shrewsbury School (W. J. I.)

## LYCOSIDAE

Pirata, Sundevall

*Pirata hygrophilus*, Thorell. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.)

— *piraticus*, Clerck. Broseley (G. P.); Bayston Hill, Shrewsbury (H. E. F.)

— *latitans*, Blackwall. Broseley (G. P.)

Trochosa, C. L. Koch

*Trochosa terricola*, Thorell. Bayston Hill, Shrewsbury, Broseley (G. P.)

— *picta*, Hahn. Broseley (G. P.). The only example recorded is a very remarkable melanic variety of a usually richly and variously coloured and fairly abundant species ; it was found on the site of the ancient coal workings in the Broseley district, and most probably owes its sombre colouring to the dark surface of the district. Pale, dull yellowish washed-out-looking varieties of this species, showing but little of its normal characteristic markings, occur on the sea-coast in Hampshire and Dorset and other British sea-boards, but the above is the only instance I have ever come across, or heard of, of a melanic variety

## LYCOSIDAE (*continued*)

Trochosa, C. L. Koch—(*cont.*)

Tarentula, Sundevall

*Tarentula pulverulenta*, Clerck. Bayston Hill, Shrewsbury (H. E. F.)

Lycosa, Latreille

*Lycosa amentata*, Clerck. Bayston Hill; Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Shrewsbury School (W. J. I.) ; Calverhall, Whitchurch (C. F. T.) ; Bury Walls, Shrewsbury (F. C. W.)

— *nigriceps*, Thorell. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.)

— *pullata*, Clerck. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Shrewsbury School (W. J. I.) ; Bury Walls, Shrewsbury and Wrekin (F. C. W.)

— *lugubris*, Walckenaer. Bayston Hill, Shrewsbury (H. E. F.)

— *palustris*, Linnaeus. Shrewsbury School (W. J. I.)

— *monticola*, C. L. Koch. Broseley (G. P.) ; Shrewsbury School (W. J. I.)

## SALTICIDAE

Epiblemum, Hentz

*Epiblemum scenicum*, Clerck. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.) ; Market Drayton (F. C. W.) ; Shrewsbury School (W. J. I.)

— *cingulatum*, Panz. Broseley (G. P.)

Heliophanus, C. L. Koch

*Heliophanus flavipes*, C. L. Koch. Broseley (G. P.)

Neon, Simon

*Neon reticulatum*, Blackwall. Broseley (G. P.)

Euophrys, C. L. Koch

*Euophrys frontalis*, Walckenaer. Broseley (G. P.)

Attus, Walckenaer

*Attus pubescens*, Fabricius. Shrewsbury School (W. J. I.) ; Market Drayton (F. C. W.)

Hasarius, Simon

*Hasarius falcatus*, Clerck. Broseley (G. P.)

# PHALANGIDEA

*Harvestmen*

## PHALANGIIDAE

Liobunum, C. L. Koch

*Liobunum rotundum*, Latreille. Market Drayton and Wrekin (F. C. W.)

Phalangium, Linnaeus

*Phalangium opilio*, Linnaeus. Market Drayton and Betton Moss (F. C. W.) ; Shrewsbury School (W. J. I.) ; Bayston Hill, Shrewsbury (H. E. F.)

## PHALANGIIDAE (*continued*)

Phalangium, Linnaeus—(*cont.*)

*Phalangium parietinum*, De Geer. Wrekin and Betton Moss (F. C. W.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Church Stretton (M. J. H.)

— *saxatile*, C. L. Koch. Shrewsbury School (W. J. I.) ; Bayston Hill, Shrewsbury (H. E. F.) ; Market Drayton and Bury Walls, Shrewsbury (F. C. W.)

PHALANGIIDAE (*continued*)

PLATYBUNUS, C. L. Koch

*Platybunus corniger*, Hermann. Bayston Hill, Shrewsbury (H. E. F.) ; Broseley (G. P.)

MEGABUNUS, Meade

*Megabunus insignis*, Meade. Broseley (G. P.)

OLIGOLOPHUS, Simon

*Oligolophus morio*, Fabricius. Broseley (G. P.) ; Betton Moss (F. C. W.) ; Calverhall, Whitchurch (C. F. T.)

— *agrestis*, Meade. Market Drayton, Bury Walls, Shrewsbury and Wrekin (F. C. W.) ; Church Stretton (M. J. H.) ; Calverhall, Whitchurch (C. F. T.) ; Bayston Hill, Shrewsbury (H. E. F.)

*Oligolophus hansenii*, Kraeplin. Calverhall, Whitchurch (C. F. T.)

PHALANGIIDAE (*continued*)

OLIGOLOPHUS, Simon—(*cont.*)

NEMASTOMATIDAE

NEMASTOMA, C. L. Koch

*Nemastoma lugubre*, O. F. Müller. Bayston Hill, Shrewsbury (H. E. F.) ; Wrekin (F. C. W.) ; Broseley (G. P.)

Of the other orders of Arachnida (Chernetidea, or false scorpions, and Acaridea) no materials have come to hand from Shropshire. With respect to the latter of these (Acaridea) there is no British specialist yet at work on the whole group, so far as I am aware, whose time could be devoted to the identification and working out of the mass of materials that might easily be got together in any county when worked by a competent collector. Of the other order (false scorpions) I have been surprised not to have found a single example in any of the fairly extensive collections of spiders kindly made for me for the purposes of the foregoing list.

# CRUSTACEANS

The records of this class in Shropshire are few but promising ; they are due to recent and limited research. In old times little if any recognition was given to this branch of zoology by the naturalists of the county. In the twelve volumes of Eaton's *Antiquities of Shropshire*, published between 1854 and 1860, one meets with frequent mention of meres and watercourses, of *vivaria* and *piscariae ;* that is, of fish-ponds and fisheries, but there is an austere and conspicuous absence of anything like gossip about natural history. From the Latin words themselves we are able to infer that the waters so designated contained a living fauna, and we know that our forefathers included under the name of fish nearly all animals that they thought worth fishing for. It is now possible to show that the county possesses, quite apart from true fishes, many invertebrate species, of which the economic and scientific importance was formerly little suspected. Among those belonging to our present subject there is probably only one that in old times could have been thought worthy of consideration, unless as an object of disgust or contempt. The exception is the river crayfish *Potamobius pallipes* (Lereboullet). Concerning the rest there has long been, and still is, much ignorant prejudice. Comparatively few crustaceans have weapons suited to inflict injury upon man, and of those few not very many have opportunity or inclination to do him harm. The depreciatory names, such as wood-lice, fish-lice, water-fleas, and so forth, by which man miscalls many of them, only make known his own want of knowledge as to their true place in the animal kingdom.

In character and appearance the river crayfish is so nearly allied to the familiar marine lobster that it can conveniently be taken as a representative of the great sub-class Malacostraca, which contains also an endless number of crabs and shrimps. There is another vast sub-class, the Entomostraca. In a general way the idea of considerable magnitude is attached to species of the former and of diminutive size to those of the latter. Taking the average, this idea is probably correct, but nevertheless we sometimes have to deal with very tiny crabs and sometimes with very large entomostracans. Further, it must be noticed that the Malacostraca include groups or orders which at the first glance would seem to have no affinity with lobsters and prawns. Such, for instance, are the Isopoda, having as land representatives the so-called wood-lice. Here, again, smallness of size in the ordinary species tends to obscure their true place in classification, and, indeed, to trained naturalists it was a great surprise some thirty years ago when an isopod as big as a large lobster was fished up from the deep sea.

*Potamobius pallipes*, as everyone knows, is no great monster; but we have to make the most of it for various reasons. Though there are very many species of freshwater crayfishes distributed over various parts of the globe, this is the only one found living in England. In different localities it varies in size very considerably, but as an article of food it could seldom make many mouthfuls for a hungry man. Nevertheless, among the crustaceans of our inland counties it is by far the largest. Moreover, it is the highest in rank. Indeed, it is the only member of the carcinological aristocracy that a purely inland county can hope to boast of. *Limulus*, the king-crab, is out of the reckoning, because it does not live anywhere near our shores, and because it does not happen to be a crab at all. The true crabs, which stand in the front rank of the class, are the Brachyura, or short-tailed malacostracans; but of these we have neither land nor freshwater species. The next grade consists of the Macrura, a name significant of their long tails, the possession of which lowers their intellectual prestige, but adds immensely to their commercial value. The river crayfish is one of these; and, as already hinted, the only one that a county cut off from the sea can expect to yield. The testimony for its occurrence in Shropshire is as follows:—While I was staying at Ludlow in August, 1906, a local angler to whom I was introduced, but whose name I have ungratefully forgotten, told me that he had on one occasion taken more than two dozen crayfish in Oakley Park on the banks of the Teme. Already in July of the same year, in answer to my inquiries, Mr. H. E. Forrest, hon. sec. of the Caradoc and Severn Valley Field Club, had obligingly supplied me with various useful items of information, which may here be set down, to be discussed presently in their proper sequence. He writes: 'The Cray-fish appears to be very local in Shropshire. It occurs in certain brooklets in the Forest of Wyre, and I fancy I have had it from a brook near Wem. *Gammarus* is abundant everywhere. Amongst Entomostraca the usual *Cyclops*, *Diaptomus*, *Canthocamptus*, and several species of *Daphnia*, *Cypris*, *Candona*, etc., are common. *Leptodora hyalina* and *Hyalodaphnia kahlbergensis* and *Dujardini* occur in the Ellesmere meres. I have found the ephippial eggs in *D. vetula* and *pulex*.' Wood-lice, he says, are abundant: '*Asellus aquaticus* is also common. I have found *Argulus foliaceus* on Bleak and Roach in the Severn.'

Mr. Forrest's list can be corroborated at several points by other authorities, and can be supplemented by some interesting additions. At the outset, however, it shows that the county is normal in its attitude towards crustaceans, giving such a welcome to the various orders as its natural features would justify us in expecting. From among the Malacostracan orders, only the Macrura, Isopoda, and Amphipoda are represented. It would be little short of a miracle to find here any of the others. Of aquatic species we have then thus far the macruran crayfish, the amphipod *Gammarus pulex* (Linn.), and the isopod *Asellus aquaticus*, Linn. The first and third, while common to many counties, are the only representatives of their respective orders in our inland waters. *Gammarus pulex*, on the other hand, though the only common and abundant species in that situation, is not a solitary representative of its order. There are other amphipods nearly allied to it, which because of their habitat pass under the general name of well-shrimps. These are seldom met with, although known to occur in many parts of the

kingdom. A fuller acquaintance with their distribution and fresh opportunities for examining their characters would be welcome to naturalists. As they are undoubtedly harmless and undetrimental, it is a pity that human prejudice should combine with the natural gloom of wells to keep them out of view. To complete the tale of Salopian Malacostraca, the wood-lice *Oniscus asellus*, Linn., and *Porcellio scaber*, Latreille, must be mentioned. These woodland, or garden shrimps, technically known as terrestrial Isopoda, were very abundant at Ludlow in August, 1906. Various other species of this group were taken on the adjoining borders of Herefordshire, and will beyond question be found also in this county when sustained search is made for them.

On first examining the five species named in the foregoing paragraph an uninstructed observer would be little inclined to think of them as all closely related. He would not readily suppose that the two land-dwelling species were crustaceans at all. In the aquatic forms he would notice that the deceased *G. pulex* lies on its side and cannot easily be set upright, whereas the dorso-ventrally compressed *Asellus aquaticus* must lie on its back or its stomach, and cannot be set up on edge. He would see at once that both of these species are trivial in bulk compared with the crayfish, that they have a larger number of legs, fourteen instead of ten, and that their eyes are fixed instead of being movable as in their lobster-like companion. Pursuing his investigations, he would find the breathing organs in the latter species more numerous and more complicated than in the others, and concealed from sight under the sides of the great cephalothoracic shield or carapace. In the *Gammarus*, on the other hand, this important apparatus consists of a succession of simple sacs or branchial vesicles, more or less visible as they hang freely beneath the middle body or peraeon of the animal. But in the Isopoda, both aquatic and terrestrial, there is again a quite different arrangement. Here the respiratory mechanism is not found in the combined head and peraeon, nor in the peraeon alone, but is transferred to the third division of the body, variously spoken of as abdomen, pleon, or tail. As might be expected, to match the differences in form and position of structures, which all alike are properly speaking the external gills, there are corresponding differences in the heart which beats to keep up the circulation within them. But in spite of all these marks of separation there are binding characters of high importance. In common with crustaceans in general all the species have a chitinous integument, and, besides that, the habit of shedding the external skeleton several times during life. They are not like insects, which do not grow after they have assumed the adult form. But they grow as it were by fits and starts. When once consolidated their chitinous envelope will not stretch. It is unelastic. But the parts within the unyielding case continue to receive accessions. Consequently from time to time the case itself has to be burst open and cast off. In the meantime within the old a new sheath has been in preparation. This for a little time remains soft and pliable, until the owner, which has contracted its muscles to facilitate disengagement from one costume, has again expanded them to fill out its roomier change of raiment. Apart, however, from characters common to the class at large, the species now under consideration are marked as members of the same subclass by some remarkable bonds. All of them show in some part of the

body a division into movably articulated rings or segments. It can easily be seen also that in many instances a segment has in attachment to it a pair of movably articulated appendages. On first endeavouring to count and compare these constituent elements, one might be tempted to consider them additional marks of difference rather than signs of agreement. Closer inspection will justify a view the exact opposite of this. In the first place we shall find that a freely jointed segment never has more than one pair of appendages. But, leaving out of count the eyes, all the species alike have nineteen pairs of appendages, and by comparison of parts of the body which are movable in some species and not in others it can readily be inferred that for every pair of appendages there is a corresponding body-segment. Whether the sessile-eyed species ever had an independent ocular segment which they have since lost, remains undecided. At the other extremity of the body there is a segment called the telson, sometimes free, sometimes fixed, but in either case without appendages. All the Malacostraca, then, are bound together by this arithmetical tie, that their body segments never exceed the number of twenty-one, and that between the first and twenty-first there are nineteen, each one of which may have one, but never more than one, pair of appendages. A rough idea as to the apportionment of these may be given by saying that there are two pairs of antennae, four or six of mouth organs, seven or five of raptorial or ambulatory limbs, and six to which the names of pleopods and uropods, that is, swimming feet or tail feet, have been applied. It may be noticed that in the crayfish the carapace extends back to the fourteenth segment, which is feebly movable, while all that precede it are consolidated into one piece. In the sessile-eyed *Gammarus* and the isopods, all the seven segments from the eighth to the fourteenth are freely movable. In the crayfish and *Gammarus* the pleon has seven movable segments, but in the isopods here mentioned the telson is in coalescence with the segment preceding it. In *Asellus aquaticus* all or almost all the segments of the pleon seem to be fused into a kind of caudal carapace. In this species the female has lost one pair, presumably the second, of its pleopods. The terrestrial isopods, like most crustaceans, have two pairs of antennae, but the first pair are diminutive and not very easy to observe. The second antennae offer a feature by which *Porcellio scaber* can easily be distinguished from *Oniscus asellus*. In both the stem or peduncle is five-jointed, but the terminal lash or flagellum is three-jointed in *Oniscus* and only two-jointed in *Porcellio*. At Ludlow there occurs a light brown, sometimes very broad, variety of *P. scaber*. The mottled variety, known as var. *marmorata*, as a rule not very large, is also not uncommon. Except by colour these cannot be separated from the ordinary dark specimens of *P. scaber*. In all the three varieties the second antennae have the first joint of the flagellum shorter than the second, only the first two pairs of pleopods tracheate, and the telsonic segment acute at the tip. The pleopods of both sexes of var. *marmorata* were examined and proved to agree with those of the normal form. The first two pairs of pleopods in the male are here, as in many other isopods and crustaceans of other orders, strongly modified for sexual purposes. Mr. Forrest notices that *Gammarus pulex* is abundant everywhere. Of specific localities, Professor G. S. Brady, F.R.S., mentions for it the canal, Ellesmere, and I have myself taken it in the Teme at Ludlow. On one occasion at some distance from the river, while searching

the sides of a road leading to Oakley Park for land isopods, on lifting a stone, the underside of which was moistened by a trickle of water in the ditch, I was surprised to find a lively specimen of this *Gammarus*. It helps to account for its extensive distribution, when we find how excessively shallow the streams may be in which it retains its vitality.

The orders of the Entomostraca, to which we have now to turn, are not bound together by ties so obvious or so easy to explain as those uniting the Malacostraca. The Branchiopoda show much variation in the number of their body segments, while in the Ostracoda the body as a rule shows no segmentation at all. The Copepoda on the other hand appear to have the number of segments strictly limited, but some of the segments never carry appendages, and in many parasitic forms the segmentation is greatly obscured. There are three suborders of the Branchiopoda, the Phyllopoda, which are not as yet represented in our Shropshire records, the Cladocera and the Branchiura. The latter is a very small group, but it supplies us with the interesting species *Argulus foliaceus* (Linn.). This little pirate is best known in English as the carp-louse. By the comparison, however, of many accounts the impartiality of its appetite for freshwater fishes is amply vindicated. Some say that it is commonest on the stickleback. From these humble victims it can turn to roach and pike and salmon-trout. As Mr. Forrest has noted, it also persecutes the bleak. This is a fish with glittering scales which once were used for rivalling by human art the pearls of Nature's produce. At one time our *Argulus* was classified with the Copepoda. It differs from them in at least one important peculiarity : while the parasitic members of that order have the habit of carrying about their eggs, often in long string-like sacs or otherwise attached to the maternal body, until they are ready for hatching, the Branchiura glue their eggs to some extraneous support. They have one pair of their mouth organs modified either into sucker-disks or into strong grappling-hooks, by which they adhere firmly to the host whose juices they are imbibing. When the meal is finished, they can let go and swim about actively at their own sweet will. It is probably this capacity for disengagement that at some time or another has led the wandering mother to dispense with the personal carriage of her nursery. Further, it may explain the liberal-mindedness of these parasites in the choice of food, since the fish that they quit cannot be expected to await their return, and that which offers itself to their re-awakened appetites is as likely as not to be of a different species. Among the Copepoda it has been noticed that fishes, if they get the chance, will readily feed on the parasites which have been feeding on them. But a fish which swallows an *Argulus foliaceus* is said very quickly to repent of its greediness, and to be as eager to disgorge as it was to devour this vicious and too lively morsel.

Very different in appearance and structure from the Branchiura are the innocent little Cladocera. Their name of branching-horns they owe to the two rami of their second antennae, which are their swimming organs. To their translucent more or less valve-like envelope science is much indebted. It allows the works and the working of the living machine to be easily and humanely inspected beneath the powerful eye of the microscope. In this group our county makes its best display of records. When the Midland Union of Natural History and Scientific Societies visited Ellesmere in August, 1894,

an excursion for biologists round the meres and peat-mosses of the neighbourhood was led by Messrs. H. J. E. Peake and J. A. S. Jennings. Notwithstanding heavy rain in the afternoon the excursion was well attended and very successful. 'The botanists succeeded in finding most of the local plants, including *Nuphar pumila*, *Lobelia Dortmanna*, *Alisma natans*, *Utricularia minor*, &c. The meres were all found to be "breaking," Ellesmere and Whitemere with *Gloeotrichia echinata*, Colemere and Crommere with *Aphanizomenon flosaquae*; in spite of this *Leptodora hyalina*, *Daphnia jardinii*, and *Bosmina coregoni* were taken. The two latter do not appear to have been recorded from this district before.'[1] One, however, if not both, had been earlier taken, though the capture was not published. A letter from Professor G. S. Brady, informs me that in 1887 he took with the deep net in Ellesmere Lake *Hyalodaphnia cucullata* (Sars), *Leptodora kindtii* (Focke), and *Bosmina coregoni*, Baird; from the canal, Ellesmere, *Simocephalus vetulus* (Müller), *Eurycercus lamellatus* (Müller), *Chydorus sphaericus* (Müller), and *Alona costata*, Sars; from Whitemere *Eurycercus lamellatus*, *Chydorus sphaericus*, and *Polyphemus pediculus* (Linn.). When the lists supplied by Mr. Forrest, the Midland Union, and Professor Brady are collated, with the needful explanations, and addition of the names *Daphnia lacustris*, Sars, and *Ceriodaphnia laticaudata* (P. E. Müller), species which I obtained in the lake at Oakley Park, it will be found that the county can lay claim to ten or eleven species of Cladocera. This is a modest company in point of numbers, but of character well qualified to encourage further research. The generally accepted classification of the suborder, due to the celebrated Norwegian naturalist, G. O. Sars, recognizes two principal divisions, the Calyptomera, for those species which have the body and limbs covered (though generally not concealed) by an arched test or carapace, open below; the Gymnomera, for those devoid of such a covering. The former are divided into two tribes, the Ctenopoda, which have six pairs of feet, all but the last pair very much alike, and the Anomopoda, in which the five or six pairs of feet exhibit considerable differences. The second tribe contains several of the species with which we are here concerned. It comprises four families, Daphnidae, Bosminidae, Macrotrichidae, and Chydoridae. In the last of these the important second antennae have both branches three-jointed, but in the other three one branch has three and the other (usually) four joints. The Daphnidae are distinguished from the two which agree with them as to the antennae by characters of the intestine. In crustaceans generally this would be a very troublesome structure on which to found distinction, but here the difficulty vanishes through the artless simplicity of the animals. Innocent and unashamed they allow us to peer freely into their insides, without the necessity of invoking any exceptionally penetrative rays. In the Daphnidae, then, the intestine is furnished in front with two caecal appendages, but is itself without a loop. The Bosminidae have neither loop nor caecal appendages. The Macrotrichidae only rarely have the latter, but vary as to the former, and in cases of difficulty must appeal to other characters, such as their long mobile first antennae. In the Chydoridae the intestine is always looped.

The most familiar of the species above-mentioned is commonly called *Daphnia pulex* (de Geer). It is assigned to de Geer, because he first clearly

[1] *Natural Science*, v, 237–8 (1894).

discriminated it from its numerous, too numerous, cousins. By the latest rules of nomenclature it ought to be called *Daphne pulex* (Linn.), because its specific name originated with Linnaeus, who without any very accurate knowledge about it set it down as *Monoculus pulex*, the one-eyed flea. Then, in 1776, O. F. Müller placed it in a new genus *Daphne*, using the name of a shrub, because the animal has shrubby or branching antennae. But, in 1785, he bethought him that it was confusing for a crustacean to share the name of a vegetable, so he changed *Daphne* into *Daphnia*, a change which is now considered unlawful. The perplexity does not end here. From the original *Daphne* or *Daphnia* several genera have been separated, not all of them even belonging to the family Daphnidae or Daphniidae. Moreover, the existing *Daphnia* is divided by Lilljeborg into three subgenera, *Daphnia* in restricted sense, *Hyalodaphnia*, Schödler, and *Cephaloxus*, Sars, which some writers regard as distinct genera. The two first are distinguished by Lilljeborg through characters of the female. In *Daphnia* it has the first antennae not entirely covered by the rostral part of the carapace, and, besides, placed well above the apex of the rostrum ; and in the hind part of the body it has the two anterior processes clearly separate or only slightly coalesced at the base, whereas *Hyalodaphnia* has these two processes largely coalesced, and the first antennae fully covered by the rostral part of the carapace, with their sensory hairs extended to, or nearly to, the rounded apex of the rostrum.[2] Here it must suffice to say that the true *D. pulex* has passed under several other names, and that several other species have been recorded as *D. pulex*. It follows, therefore, that the name alone, without reference to the authority for it, or description of identifying features, leaves both genus and species uncertain. *Daphnia hyalina*, Leydig, is distinguished from *D. pulex* by having the terminal ungues of the tail finely ciliate, instead of being armed with spiniform setae.[3] But *D. hyalina* has itself been distributed over four species, subspecies, or varieties, *hyalina*, *pellucida*, *lacustris*, *galeata*. Of these *D. lacustris* is marked at least in the female by having the front of the head rounded in profile, and its lower margin distinctly sinuate. The reason that experts so frequently differ, not only from one another, but from themselves, at varying epochs of study, is that in Nature there are so many connecting links. The naturalist, confronted with the two extremes of a series, gives to each of them specific rank. But, later on, becoming acquainted through his own or other researches with many intermediate forms, he is at a loss where to draw a line of separation, and takes refuge in subordinate terms, by which the simplicity of the Linnaean binomial system is destroyed. A specimen of *D. lacustris* from Oakley Park was taken in the act of exuviation. This was so far completed that the newly stripped animal could be mounted for the microscope side by side with its discarded antennae, jaws, feet, and carapace, with the long terminal spine of the latter still ensheathing the new process, as though a pledge of good faith, to show that the rejuvenated animal and its slough really belonged together.

In the genus or subgenus *Hyalodaphnia*, Mr. Forrest mentions *H. kahlbergiensis* and *H. dujardinii*, and Dr. Brady records *H. cucullata*, G. O. Sars ; while the Midland Naturalists speak of capturing *Daphnia jardinii*. It might be supposed that we here had to do with four species. It is not at all certain

[2] *Cladocera Sueciae*, 67. [3] Ibid. 69.

that we are concerned with more than one. In 1887 Dr. Baird published the species *D. jardinii* with so brief and incomplete a diagnosis that subsequent authors have failed to identify it with any assurance. From the character that it has a triangular head with mucronate or dagger-like peak, Lilljeborg thinks it probably identical with *D. galeata*, Sars, 1863 ; but he also decides that the form assigned to *Hyalodaphnia kahlbergiensis* by Brady, in 1898, is likewise a synonym of that species, tracing the mistake to a confusion on Dr. Brady's part of *D. galeata* with *D. cucullata*, Sars, 1862. In the long synonymy of the latter species, we find *Hyalodaphnia kahlbergiensis*, Schödler, 1866, and *H. jardinii*, Sars, 1890.[4] The designation *H. dujardinii* is not noticed by Lilljeborg, and is probably due to inadvertence, or intended for an emendation. *Hyalodaphnia cucullata* (Sars), as lately attested by Brady, is the only one of the four titles which can at present be safely included in the fauna of Shropshire.

Mr. Forrest makes mention of the ephippial eggs of *D. pulex* and *D. vetula*. The ephippium is a sort of case formed and eventually detached from the maternal carapace, when the so-called winter or resting eggs have been fertilized by the male. The eggs of the Cladocera and of many other entomostracans have the capacity of spending a long period buried in dried mud, and hatching out when the requisite supply of water arrives. *D. vetula*, O. F. Müller, was by Schödler in 1858 transferred to a new genus, *Simocephalus*, distinguished from *Daphnia* by having the head not carinate above but smoothly convex. As, however, the name *Simocephalus* had in the same year just previously been used by Günther for a genus of snakes, Canon Norman in 1903 renamed the crustacean genus, so that the species now under discussion became *Simosa vetula* (O. F. M.). From this genus, in common with *Daphnia* and its subgenera, *Ceriodaphnia*, Dana, 1853, is distinguished by not having the distinct rostrum which they possess. *C. laticaudata*, P. E. Müller, belongs to the group of species which have the terminal caudal ungues not armed with spines near the base. The tail itself is large and dilated in the middle, and the front of the female rounded and smooth.[5]

The family Bosminidae was for long composed of the single genus *Bosmina*, Baird, 1850, but in 1895 M. J. Richard discovered the disconcerting species *Bosminopsis deitersi*, which has both branches of the second antennae three-jointed. It is an exotic species outside of our range. *Bosmina coregoni*, Baird, is distinguished by Lilljeborg, for the female, as having the spines of the caudal ungues in a single series near the base, no setae within in front of the hinder lower angle of the valves of the carapace, and the first antennae of the adult only moderately thick towards the base.[6]

To the family Chydoridae belong three of our species, *Chydorus sphaericus* (O.F.M.), *Alona costata*, G. O. Sars, and *Eurycercus lamellatus* (O.F.M.). The last is distinguished from the other two by having the front of the intestine furnished with two short caeca which they dispense with. It is also a very much larger species, the female actually attaining [such noble proportions as are implied in] the length of a seventh of an inch, while the others stretch scarcely or not at all beyond a fiftieth of that unit. Not even

[4] *Cladocera Sueciae*, 101, 103, 127.
[5] Ibid. 185. [6] Ibid. 226.

so are they to be despised. Concerning the little rapidly rolling *Chydorus*, Lilljeborg says :

> Without doubt they form, by reason of their multitudes, an important constituent of the nourishment of just hatched fishes ; for example, in the intestinal canal of very little Cypridídae I have seen them lying in a single row, where there was no room for more rows than one.[7]

In lateral view the outline of *Alona costata* is ovate not circular.

The Gymnomera, like the preceding division, are subdivided into two tribes. These are the Onychopoda, called nail-footed, because their four pairs of feet have a toothed maxillary process at the base ; and the Haplopoda, called simple-footed, because their six pairs of feet are without such a process. To the former tribe, in its single family the Polyphemidae, belongs *Polyphemus pediculus* (Linn.). It has the head marked off from the trunk by a conspicuous impression above, the caudal process elongate, with two large apical caudal setae. The second antennae have in appearance both branches four-jointed, but what looks like a basal joint in the upper or outer branch is really a delimited but not articulated part of the peduncle.[8] The great eye occupying the almost hemispherical front of the head, and the swelling brood cavity on the upper part of the trunk in the female, make this animal notable, although the small fraction of an inch which it measures in length at its largest is not very suggestive of the cruel one-eyed giant after whom the genus is named.

The Haplopoda comprise a single family, the Leptodoridae, with the single genus *Leptodora*, Lilljeborg, 1861. The species *L. hyalina*, on which it was founded by Lilljeborg, proved to have been earlier described by Focke as *Polyphemus kindtii*, in 1844, so that its name is now accepted as *Leptodora kindtii* (Focke). As indicated by its transference to a different tribe, it is in many ways distinct from the genus to which it was at first referred. The limbs are without an outer branch, and only the elongate first pair carry a small maxillary process. The long head narrows almost conically to the terminal eye. The caudal segment is drawn out cylindrically to a great length, and the brood-sac of the female rises balloon-like from the back of the trunk. The young are hatched from the winter-eggs in a nauplius form, having only the two pairs of antennae and the mandibular palps developed, but none of the limbs.[9]

That these small creatures are valuable as a food-supply for fishes may be known to many. Few persons perhaps ever think of them as stimulating the rapacious ingenuity of the vegetable kingdom. Yet Kerner, in his discussion of ' Plants with Traps and Pitfalls to ensnare Animals,' says in regard to bladderworts,

> The majority of the animals caught by the bladders are crustaceans. It is principally larvae and adult individuals of small species of *Cypris*, *Daphnia*, and *Cyclops* that fall into the trap, but larvae of gnats and various other small insects, little worms, and infusoria, are also not infrequently met with imprisoned in the bladders. The number of animals captured is comparatively large. In single bladders the remnants of no less than twenty-four small crustaceans have been observed. The prey secured by *Utricularia minor*, which lives in little pools of still water, in peat-bogs, is very abundant.[10]

[7] *Cladocera Sueciae*, 566. [8] Ibid. 597. [9] Ibid. 650.
[10] Kerner and Oliver, *The Natural History of Plants*, i, 122 (1895).

The mechanism of the trap and the motives which allure the prey are instructively dealt with by Professor Kerner, who thinks that hope of escape from foes may often be the temptation to enter these tents of treachery. Only very small animals, he says,

> which can easily slip in between the relatively large bristles, reach the inside of the bladder, whilst larger creatures, which would impair the whole apparatus, are prevented from coming near it. Thus the most probable explanation is that lesser animals pursued by greater take refuge in the hiding-places behind the bristles, and so fall into the trap. Another very striking fact is that the bladders of Utriculariae, living in still water, look delusively like certain Ostracoda, especially species of the genus *Daphnia*. The bladder itself resembles the shell-covered body in size and form, and the bristles the antennae and swimmerets of one of these crustaceans. Whether there is any significance in this curious similarity of outward appearance must be left undecided.[11]

In speaking of *Daphnia* as belonging to the Ostracoda instead of the Cladocera, the passage just quoted follows a long discarded classification, without, however, in any way diminishing the interest of the general statement itself.

Ostracoda differ from the Cladocera by having the body, which is seldom in any way segmented, wholly encased in a bivalve test or carapace, so that they look more like bivalved molluscs than crustaceans. The species are very numerous and some of them very generally distributed, but the records for Shropshire are scanty. Mr. Forrest mentions the genera *Cypris* and *Candona*, and Professor Brady specifies *Cypridopsis vidua* (O. F. M.), all belonging to the family Cyprididae. To these can be added, from the family Cytheridae, *Metacypris cordata*, Brady and Robertson, and *Cytheridea torosa* (Rupert Jones). The last was taken by Dr. Brady in the Ellesmere Canal.[12] Concerning *Metacypris cordata* Brady and Norman say, 'This remarkable species was first found in several gatherings from the East Anglian Fen district.' All the specimens, however, were only dead shells. More recently they found perfect animals in Irish localities. 'All these specimens were females; but in some later gatherings from Ellesmere Canal, Osmere, and Colmere, Shropshire (G. S. B.), we have found a few males.'[13] The fewness of the males is connected with the circumstance that in several groups of the Entomostraca parthenogenesis is extensively prevalent.

The order of the Copepoda, which remains to be noticed, is referred to by Mr. Forrest in his mention of 'the usual *Cyclops*, *Diaptomus*, and *Canthocamptus*.' Dr. Brady records *Diaptomus gracilis*, Sars, from Ellesmere Lake and Whitemere, and from the Ellesmere Canal *Cyclops strenuus*, Fischer, and *C. serrulatus*, Fischer. From the lake in Oakley Park I myself obtained *C. signatus*, Koch, and *C. viridis* (Jurine). This brief catalogue might require, but will not here justify, a full discussion of the order. It may suffice to notice that *Canthocamptus* is the ordinary but not accurate spelling of Westwood's genus *Canthocampus*; that *Diaptomus gracilis*, Sars, belongs to the family Diaptomidae, in which the males have only one of the first pair of antennae modified into a geniculate grasping organ, whereas in the Cyclopidae, to which the great genus *Cyclops* belongs, these antennae are alike on both sides, and both adapted for clasping. In *C. serrulatus*, it may be

[11] Kerner and Oliver, *The Natural History of Plants*, i, 122 (1895).
[12] Brady and Norman, *Trans. Roy. Dublin Soc.* (Ser. 2), iv, 175 (1889).
[13] Ibid. 124.

added, the first antennae are twelve-jointed, but they are seventeen-jointed in the other three species of Cyclops above mentioned. In *C. viridis*, however, these seventeen joints do not enable these antennae even in the female to reach back beyond the first or cephalothoracic segment, as they do in the other two species. In *C. strenuus* the caudal furca is between two and three times as long as the preceding segment, in *C. signatus* less than twice as long. For the last species Scourfield considers that the name *C. fuscus* (Jurine) should be preferred.[14]

From the foregoing notes it should be apparent that the carcinology of Shropshire is as a fertile field, in which as yet only a few furrows have been ploughed.

[14] *Journ. Quekett Microsc. Club* (Ser. 2), vi, 133 (1895).

# FISHES

Shropshire being an inland county many miles from the sea has naturally a fish-fauna confined exclusively to those species which inhabit fresh water permanently or which migrate periodically to or from the sea for the purpose of breeding. The first-named class calls for no special comment, the species found here being of very general distribution throughout England and the continent. Amongst the migratory fishes however there are several recorded in the list which are not usually met with so far from the sea. These are the twait and allis shad, sea trout, flounder, sturgeon and lamprey. All these have reached Shropshire by travelling via the Bristol Channel up the river Severn, but changes in the river channel—particularly the construction of navigation weirs—have for many years back put an almost entire stop to their upward journey, so that only an occasional lamprey is now seen in the upper Severn. Rev. W. Houghton, author of *British Freshwater Fishes*, was a Shropshire vicar, and some of his figures are drawn from local specimens. Except in the writer's *Fauna of Shropshire* no separate list of the county's fishes has ever been published.

## TELEOSTEANS

### ACANTHOPTERYGII

1. Perch. *Perca fluviatilis*, Linn.

This handsomely marked fish is abundant in the Severn and other streams in parts where the current is sluggish. It also occurs in most ponds and pools, not infrequently attaining to a large size when it will take baits intended for pike. It goes about in shoals, so that an angler who catches one perch will generally secure several more in rapid succession. The flesh of a good sized perch is excellent fare, except when the flavour is spoilt by residence in muddy water.

2. Ruff or Pope. *Acerina cernua*, Linn.
*Locally*, Jack Ruff, Boar Pig.

In general appearance the ruff resembles the perch, but it is devoid of bright colouring and has a semi-transparent body like the gudgeon. It never grows large and is useless for the table. It is common in the Severn where the bottom is muddy and the current deep and slow.

3. Bullhead or Miller's Thumb. *Cottus gobio*, Linn.

This rather ugly little fish is found commonly lurking under stones in our smaller streams. The sharp bony processes at the back of the head have been known to cause death to the kingfisher by sticking in the throat of the bird when he attempted to swallow the dangerous morsel.

### HEMIBRANCHII

4. Three-spined Stickleback. *Gastrosteus aculeatus*, Linn.

Common in rivulets and ditches of clear water. The pugnacity and brilliant colouring of the male and the nest-building habit of the species render this tiny creature a most interesting inmate of the aquarium. In most species of fish the female is larger than the male, but in the stickleback the difference is most marked, the female being more than twice the size.

5. Ten-spined Stickleback. *Gastrosteus pungitius*, Linn.

Distinguished from the last by having nine or ten spines on the back. It lives in both sea and fresh water and suffers no inconvenience even if transferred direct from one to the other. Rev. W. Houghton found it in ditches on the Weald moors.

## ANACANTHINI

6. Flounder or Fluke. *Pleuronectes flesus*, Linn.

This is the only flat fish that habitually ascends rivers above the tideway. Years ago flounders used to be taken even as high up the Severn as Shrewsbury, but the construction of navigation weirs subsequently prevented their travelling up. I have met with several old fishermen who in their young days took flounders in Shrewsbury ; one of them remembers seeing the fish in hundreds on the gravelly bottom between the byelets under the English bridge.

## HAPLOMI

7. Pike. *Esox lucius*, Linn.

*Locally*, Jack.

Only too abundant for the welfare of the trout and other anglers' fish on which it preys. The pike is equally at home in pools, canals and streams ; it lives to a great age and not infrequently attains to a weight of 20 to 30 lb. or more, the biggest being invariably females. Those caught in the Severn are usually in splendid condition—heavy in proportion to their length. I have seen seven good sized dace taken out of the stomach of a 5 lb. pike, and in another instance a pike devoured a 'brother' nearly half his own weight.

## OSTARIOPHYSI

8. Carp. *Cyprinus carpio*, Linn.

Although seldom caught and really not worth angling for, carp are found in most of our larger pools and meres. I never heard of one being taken in the Severn or any other running water. At Sandford Pool near Whitchurch, where the water is clear, they have been seen to avoid a net by burying their snouts in the mud so that the net passed over their backs.

9. Crucian Carp. *Cyprinus carassius*, Linn.

Eyton mentions this introduced species as occurring in a pond at Cotwall near Wellington.

Another introduced fish—a variety of the latter, the goldfish (*Cyprinus auratus*)—is kept in the Quarry Pond, Shrewsbury, and in many other ponds and ornamental waters. It is said to have bred naturally in a pool near Hadnall.

10. Gudgeon. *Gobio fluviatilis*, Flem.

Not uncommon in the Severn, Vyrnwy and the tributary streams. Like other fish with barbels pendent from the mouth it lives and feeds exclusively at the bottom of the water. It is much sought after by anglers as a bait for pike, etc.

11. Barbel. *Barbus vulgaris*, Linn.

A specimen weighing 15 lb. is said to have been caught in 1898 in a deep part of the Severn known as Blockley's Hole near Shrewsbury.

12. Rudd. *Leuciscus erythrophthalmus*, Linn.

Resembles the roach and is frequently confounded with it, but may be distinguished by its shorter head, reddish colour—especially in the eye—and by the dorsal fin being further back than the ventrals ; in the roach the dorsal originates over the ventrals. In Shropshire the rudd occurs in Bomere and Shomere Pools near Shrewsbury and Fennymere near Baschurch. The rudd in Bomere and Shomere differ greatly in colour in accordance with the nature of the bottom, those in Shomere (peaty bottom) being almost black, whilst in Bomere (gravelly bottom) they are silvery. Specimens from both pools are in Shrewsbury Museum.

13. Roach. *Leuciscus rutilus*, Linn.

Found in shoals, often abundantly, in the Severn and many other streams, as well as in some pools.

14. Dace. *Leuciscus dobula*, Linn.

*Leuciscus vulgaris*—Day.

Essentially a river fish the dace is abundant in the Severn and most of the other streams in Shropshire, where it is an object of pursuit to hundreds of anglers young and old. It never grows so large as the roach, rarely if ever exceeding 1 lb. in weight.

15. Chub. *Leuciscus cephalus*, Linn.

A thick-headed, dull-coloured fish, common in the Severn and tributaries, where it grows to a large size. One is said to have been taken in the Severn weighing 9 lb. In hot weather the chub is fond of basking in the sun close to the surface, but at such times it will not take a bait.

16. Minnow. *Leuciscus phoxinus*, Linn.

A pretty little fish abundant in shallow water along the margin of the Severn and other streams, particularly at the junctions of

drains and rivulets with the main stream. About March when the breeding season commences the male assumes the most brilliant colours. Minnows are much sought after by anglers as bait for perch, etc.

17. Tench. *Tinca vulgaris*, Cuv.

Found in many pools and ponds, especially such as have muddy bottoms. In mill ponds it may frequently be caught by hand against the sluice gates, and is so sluggish that it allows itself to be taken with scarce an effort to escape.

The pretty golden-coloured variety *Tinca aurea* is found in Alkmond Pool near Shrewsbury. Two were caught there in August, 1900, which weighed between 4 and 5 lb. each.

18. Common Bream. *Abramis brama*, Linn.

Found in some of the larger pools in Shropshire and in parts of the Severn where the stream is sluggish and the bottom muddy. Compared with the next species the scales are smaller, the anal fin is longer, and the fish grows larger and heavier.

19. Bream-flat or White Bream. *Abramis blicca*, Bloch.

This deep-bodied silvery-white fish has been not inaptly compared to a tin plate set on edge. Some years ago I found it very numerous in the upper pool at Berrington near Shrewsbury, and it is abundant in Betton Pool. It swims in shoals and takes a bait readily, but is useless for the table, the flesh being very insipid. It does not attain to a large size. In Betton Pool it comes to the shallow end to deposit its spawn amongst the water weeds in the spring, but is rarely seen at any other season.

20. Bleak. *Alburnus lucidus*, Heck. and Kner.

This pretty little fish, easily distinguished from our other silvery fish by its slender body, is common in the Severn and several of its tributaries. At Burr's lead works, Shrewsbury, a stream of warm water used formerly to run into the Severn; at this point there was always a big shoal of bleak, and so closely packed were they that the writer used to catch them by simply dragging a bare fish-hook through the shoal. One or two pike always lurked in the deeper water here, and when one dashed in from time to time to seize on its victim the shoal of bleak rushing over the shallows had momentarily the appearance of an agitated mass of quicksilver.

21. Loach. *Nemachilus barbatulus*, Linn.
*Locally*, Stone Loach.

Commonly to be found lurking under stones, not only in streamlets but also plentifully in the Severn wherever the bottom is gravelly. Like other fish with barbels on the jaws it always stays on the bottom, never swimming about in open water. It dies in a very few minutes if taken out of water.

## MALACOPTERYGII

22. Salmon. *Salmo salar*, Linn.
*Locally* (young), Samlet.

Severn salmon have a wide reputation for excellence, but the term is now almost restricted to the fish taken in nets at or below Worcester. Not a century ago salmon used to be taken in large numbers not only in the neighbourhood of Shrewsbury but 40 to 50 miles higher up the river, as well as in the Vyrnwy, Tanat and other tributaries. Nowadays the changes wrought by human agency in the river channel and excessive netting of the lower reaches have entirely altered the state of affairs, and comparatively few fish pass up. Those that do reach as high up the Severn as Shrewsbury do not stay there to spawn, but go up to the clearer waters of the Vyrnwy, where they find a clean gravelly bottom suited to their purpose. That a fair number do spawn in these upper waters is evident, because the young salmon, locally known as samlets, occur in the river every year in hundreds. It is much to be regretted that in defiance of the law these samlets are taken in numbers by unscrupulous anglers. Doubtless some are taken in ignorance in mistake for trout. The largest locally-taken salmon I have seen lately was a 50 lb. fish caught in the Vyrnwy close to its confluence with the Severn 10 June, 1899. The salmon ascend the river for spawning from December throughout the early months of the year. The samlets remain in the river for (possibly) over two years, when they lose their trout-like colouring and become silvery preparatory to descending to the sea. In this state they are called smolts. The male in the breeding season has the tip of the jaw strongly hooked. After spawning the fish is called a kelt.

23. Sea Trout or Salmon Trout. *Salmo trutta*, Linn.

That sea trout should ever penetrate to the upper waters of the Severn may appear improbable, but Rev. J. B. Meredith informs me that he has several times caught specimens near the confluence of the Vyrnwy and Severn. The late Mr. Harry J. Potts, who had had much experience in angling for sea trout in other parts, was with Mr. Meredith

when he landed one of these lively fish weighing about 1 lb. Mr. H. H. Hughes and other experienced Shrewsbury anglers also attest that sea trout have been caught in the Severn around Shrewsbury. No recent instance is known however, and it appears that the upward migration has been stopped or greatly hindered by the construction of weirs and by the pollution of the river.

24. Brown Trout. *Salmo fario*, Linn.

The common brown trout is the only indigenous species here, though others have been introduced. It is found in all our brooks as well as in the Severn, but in that river its numbers have been much reduced by overfishing and the depredations of pike. In the river a large fish—as much as 4 to 5 lb.—is caught occasionally, but in the brooks the trout are small and seldom exceed 1 lb. The Shropshire Angling Association has bred a number of Loch Leven trout (*S. levenensis*) and turned them into the Severn and its tributaries. They seem to thrive well, but do not long retain their distinctive characteristics.

25. Rainbow Trout. *Salmo irideus*, Gibbons.

This beautifully coloured fish, a native of America, has been introduced lately into several ponds and private streams. From these last a few have evidently found their way into the Severn, for several specimens have been caught with rod and line in the river. Rainbow trout grow larger and much more rapidly than common trout, and thrive better than that fish in pools.

26. Grayling. *Thymallus vexillifer*, Linn.

The sweet-scented grayling or umber is even a greater favourite with anglers than the trout. It is fairly plentiful in the Severn in places where there is a smooth but strong gliding current and a gravelly bottom, but perhaps the best grayling streams in the kingdom are to be found in the neighbourhood of Ludlow and Leintwardine. Anglers travel far and pay high prices for the privilege of fishing these waters.

27. Allis Shad. *Clupea alosa*, Linn.

This and the next species are closely allied to the herring, but unlike that fish enter fresh water from the sea and travel a long way up rivers. The allis shad is the larger of the two and looks like a big herring with two dark blotches on each side. No shad have been noticed in the Severn for many years past, but that they formerly came up the river we have evidence in the act quoted below, as also the witness of old men living at Cressage who can remember shad being caught there with a casting net on moonlight nights; the surface of the water at such times was alive with glittering fish.

28. Twait Shad. *Clupea finta*, Cuv.

The twait is distinguished from the allis shad by its smaller size, stouter and fewer gill-rakers, and by the more numerous spots on the sides. An act of George III., 1777, for 'the better preservation of fish, and regulating the fisheries in the rivers Severn and Vyrnwy,' mentions 'lampreys, shads and twaits which at certain seasons of the year come up the said river in great quantities.' That shad never ascend the Severn now is no doubt due to the construction of weirs near its mouth—a weir would be an insuperable obstacle to such fish as these.

## APODES

29. Eel. *Anguilla vulgaris*, Turton.

Common in pools, canals and streams. The young—known as elvers—may often be seen ascending small streams in hundreds. Eels spawn in the sea and apparently never return to fresh water, as none but young ones are ever seen ascending rivers. They reach pools by travelling across the grass on wet nights. The male and female were formerly described as two species under the titles of broad-nosed and sharp-nosed eels. The former seldom exceeds 18 inches in length, but the latter is often over double the size. Eels are believed to live several years in fresh water before they reach maturity and descend to the sea to spawn.

## GANOIDS

30. Sturgeon. *Acipenser sturio*, Linn.

Although a marine fish the sturgeon frequently ascends rivers for a considerable distance. Nevertheless it is somewhat surprising to find that one came as far up the Severn as Shrewsbury. A specimen 8½ feet long and weighing 192 lb. was caught just below Shrewsbury Castle on 12 September, 1802 (Eyton gives the date erroneously as 1799). Its skin was placed in Shrewsbury Museum, but has since disappeared.

## CYCLOSTOMES

31. Sea Lamprey. *Petromyzon marinus*, Linn.

By many zoologists the lampreys are not considered to be fishes at all, but are placed in a class by themselves. They have pouches instead of laminated gill-arches, and a cartilaginous skeleton; there are no scales, ribs or limbs, and the skull is devoid of jaws. The mouth is circular and adapted for sucking. They are parasitic on fishes, to which they attach themselves by the sucking mouth and rasp off their flesh by the horny teeth. They are also unlike most fishes in undergoing a metamorphosis; the young were formerly treated as a distinct genus under the name of *Ammocætes*. The sea lamprey is the largest of the three species, and is from 18 to 36 inches long. It is the lamprey alluded to in the act quoted under the twait shad, and is the same that became historically famous as causing the death of Henry I. It used formerly to spawn in the lower waters of the Severn, and large numbers were caught every year. Perhaps it was never very numerous in the Shropshire portion of the river, and of late years it has become very rare. On 10 June, 1899, a specimen 18 inches long was caught by a boy under the Welsh Bridge, Shrewsbury; another was taken in the same place about two years previously, and there is a specimen in Ludlow Museum that was caught in the Teme at Tenbury 5 July, 1878.

32. Lampern or River Lamprey. *Petromyzon fluviatilis*, Linn.

*Locally*, Nine-eyes or Seven-eyes.

This smaller species is not uncommon in streams, where it may be found lying in bunches in holes in the gravelly bottoms which it prefers for spawning. It was formerly considered a purely freshwater form, but is now known to migrate like the other species, but to spend the first three years or so of its life in fresh water before going down to the sea.

33. Mud Lamprey or Sand Pride. *Petromyzon branchialis*, Linn.

The smallest of the three species, rarely reaching 10 inches in length. It is found in similar places to the last but prefers the smaller brooks, where it is often plentiful.

## ADDENDA

6. Flounder. *Pleuronectes flesus*, Linn.

Large numbers of flounders were seen lying on the bed of the Severn at Coalport in the summer of 1905.

27. Allis Shad. *Clupea alosa*, Linn.
28. Twaite Shad. *Clupea finta*, Cuv.

Pennant, in the Appendix to his *Tour in Wales*, mentioned these, amongst other fishes, as occurring in the Severn as high up as the Welsh border.

31. Sea Lamprey. *Petromyzon marinus*, Linn.

A specimen 28 inches long was taken in the Severn at Shrewsbury 23 July, 1906. It is now in the local museum.

# REPTILES AND BATRACHIANS

In common with the neighbouring counties of England Shropshire can boast only a very meagre list of reptiles and amphibians—four species of the former and six of the latter. In my *Fauna of Shropshire* two others are included on the authority of Eyton—namely the sand lizard and edible frog. After due and careful consideration however these have been struck out of the list, the evidence clearly indicating that Eyton was in both instances misled as to the identity of his specimens. There is practically no question that these two species have never occurred in the county.

## REPTILES

1. Common Lizard. *Lacerta vivipara*, Jacq. *Locally*, Harriman.

Common on railway banks, heaths and in other open sunny situations, though as a rule avoiding the haunts of man. The female is generally larger than the male, greenish above, pale yellow beneath, only slightly spotted. The male is brownish above, orange beneath, profusely spotted with black. This lizard is ovoviviparous, but in confinement sometimes lays eggs, such ova, however, being always infertile. This laying of eggs by the viviparous species has frequently led naturalists to mistake a large brightly marked common lizard for a sand lizard, an oviparous species that in Britain is found only in Lancashire and in some of the southern counties.

2. Blind-worm or Slow-worm. *Anguis fragilis*, Linn.

This harmless but sadly-abused creature is fairly common all over the county in suitable situations. It prefers open woods and dry sunny banks where there are loose stones or crannies to which it can retire when alarmed, but it avoids human abodes. The largest I have met with measured just 18 inches. It was caught at Bayston Hill near Shrewsbury, and is preserved in the local museum. Although really a lizard, the absence of limbs gives the blind-worm a snake-like appearance, and it is generally reputed to be a snake and venomous. Its specific name alludes to the facility with which the tail breaks off—a peculiarity common to our other lizards—but I have never known a blind-worm to break its tail except when roughly handled or seized by the tail. The severed part retains its mobility and irritability for a long time; even at the end of an hour it will twitch when touched.

3. Common or Ringed Snake. *Tropidonotus natrix*, Linn.

Plentiful all over the county in suitable localities, exhibiting a distinct preference for damp situations and the vicinity of water. It loves such places both because it is fond of bathing and swimming and because there its favourite food, the frog, is found in greatest abundance. It feeds chiefly on batrachians and fish. Mr. G. A. Boulenger tells me he has never known it eat either a mammal or a bird despite the oft-repeated statement that it does. It frequently eats toads, though occasionally with disastrous results (*Zool.* 1883, pp. 303, 341). The tail is rather long and tapers to a whip-like extremity, but a specimen in Shrewsbury Museum, killed at Hanwood in 1900, has a tail as blunt as a viper's. Average length 30 inches, rarely over 36 inches. A snake killed at Minsterley in 1900 is said to have measured 5 feet.

4. Viper or Adder. *Vipera berus*, Linn.

Not nearly so generally distributed in Shropshire as the last. The viper prefers warm

rather than damp situations. It is true that it occurs numerously on the peat bog of Whixhall Moss, but I think that this is more from love of the warm black soil than of the dampness. Apparently it never enters the water for pleasure as the snake does, but it is a good swimmer nevertheless. The viper is numerous in the Forest of Wyre and round the Titterstone Clee Hill, as well as on Nesscliffe Hill and several of the sandy heaths in the north of Shropshire. Its diet is of a much more varied character than that of the common snake, as it eats lizards, mammals, birds and eggs as well as batrachians. It is especially fond of voles, and has several times been known to eat two at a meal. The females are larger and of a duller colour than the males. Average length 18 inches. I have never met with one in Shropshire that reached 24 inches, but Mr. J. Steele Elliott took one of that length in the Wyre Forest.

## BATRACHIANS

1. Common Frog. *Rana temporaria*, Linn.

Abundant in all suitable localities. A very full account of the transformations and habits of this interesting animal is given in the author's *Fauna of Shropshire*, pp. 205–16. It is not generally known that when in distress the frog can utter loud and prolonged squeals—a fact of which two instances have come under the author's observation.

2. Common Toad. *Bufo vulgaris*, Laur.

Abundant everywhere. Not nearly so water-loving a creature as the frog. It seeks its food by night, lurking by day beneath a stone or amongst rank herbage.

3. Natterjack Toad. *Bufo calamita*, Laur.

Very local or probably overlooked. Only recorded from the neighbourhood of Broseley (Potts) and Wenlock (Benson). In 1900 a few were turned out in Boreatton Park by Dr. Sankey.

4. Great Warty Newt. *Molge cristata*, Laur.

Fairly common and generally distributed, but more numerous in the south than the north. All newts are called 'askels' or 'asgals' in Shropshire, whilst the belief in their venomous character is as deeply rooted as it is general. If a cow dies mysteriously it is supposed to have swallowed a newt when drinking! Another curious superstition is that the newt goes on living in the cow's stomach and the latter gradually wastes away—robbed of its nourishment by the newt!

5. Common Smooth Newt. *Molge vulgaris*, Linn.

The most numerous and widely distributed of the three species, except in the Wyre Forest, where the palmated newt predominates.

6. Palmated Smooth Newt. *Molge palmata* Schneid.

Mr. J. Steele Elliott found this species in the Forest of Wyre near Bewdley. Upon subsequently visiting the district with him I was surprised to see that in the ponds and water-holes there the palmated newt is extremely numerous, and whilst the warty newt is common the common newt is almost absent.

# BIRDS

There is probably no inland county of England with a richer avifauna than Shropshire. The comparatively large number of species recorded in the list is due in the first place to the careful way in which the local birds have been studied by competent naturalists during the nineteenth century, and in the second place to the variety of surface presented in the area dealt with.

In order to understand the list it is necessary to note the sources whence our knowledge of the older records is derived :—

(1) 1838. T. C. Eyton in the *Annals and Magazine of Natural History*, 'An attempt to ascertain the Fauna of Shropshire and North Wales.' In this paper all the vertebrates are included, but Shropshire and north Wales are grouped together as one province. Many old records are preserved herein that would otherwise have been lost.

(2) 1864–5. John Rocke, in the *Zoologist*, 'The Birds of Shropshire.' An excellent list giving much additional matter and ample details.

(3) 1879. W. E. Beckwith, in the *Transactions of the Shropshire Archæological Society*, 'List of Shropshire Birds.' This brings the information up to date and adds several species to the list. In 1887 Mr. Beckwith commenced in the same publication a series of 'Notes on Shropshire Birds,' in which he amplified the bare details of the list by many interesting and valuable observations on the habits of birds. His death in 1892 put a sad period to this series when only half completed.

From 1892 the present writer undertook the work of recording local occurrences, with the kindly aid of several members of the Caradoc and Severn Valley Field Club and other Shropshire naturalists.

The reader may take for granted in perusing the following pages that occurrences prior to 1838 are recorded on the authority of Eyton, those between 1838 and 1865 on Rocke's authority, and those between 1865 and 1890 chiefly on Beckwith's authority. If otherwise the particular source of information is stated in the paragraph.

A glance at the map will show that Shropshire is divided pretty equally into two parts by the river Severn, which enters the county beneath the Breidden Hills on the N.W. and leaves it at Bewdley on the S.E. Although the political boundaries are purely artificial, this division of the county into two parts is remarkably natural, the two halves being totally distinct in character. For the sake of brevity they are alluded to in the following notes as the 'northern' and 'southern' districts respectively. The northern division is flat and mostly cultivated ; it contains no hills over 500 feet high except the Wrekin (1,335 ft.) and Grinshill (629 ft.), but numerous pools and meres, some of them large, whilst at Whixall and Baggy Moor there are tracts of bog and peat, in older days of much wider extent than now ; although well timbered it contains no

extensive woodlands. The southern division is very different: the whole district is more or less mountainous, and the greater portion covered with woods which in the neighbourhood of Ludlow and the Wyre Forest are almost continuous, affording shelter to many species that shun the haunts of man. On the Longmynd (1,696 ft.) and Clun Forest (1,619 ft.) there are wide tracts of elevated moorland where the curlew and grouse find congenial surroundings. The raven, buzzard, peregrine falcon and kite used to breed in the southern district, and the hobby still resorts thither, whilst most of the rarer woodland birds have been obtained in the same neighbourhood.

As might be expected, the meres in the northern district are particularly attractive to waterfowl. In former days the avocet resorted thither, and even now the bittern is not uncommon as a winter visitor. The tufted duck, shoveler, pochard and other ducks have bred here, and the little crake, little bittern, and various grebes and divers have been obtained. The most remarkable feature of our avi-fauna however is the extraordinary number of sea birds which visit us. Considering the distance inland it is really wonderful to note that no less than forty species of sea birds have occurred in Shropshire without counting shore birds, such as the dunlin, ring plover, etc. At all seasons of the year, but especially in autumn, parties of herring-gulls, kittiwakes, lesser black-backed gulls and black-headed gulls are noticed in north Shropshire—chiefly about Ellesmere. They generally travel towards the south-east and probably come from the estuary of the Dee. Most of these are only moving across the country, though some alight to feed; whilst rough weather frequently brings a few stray birds which are subsequently found in an exhausted condition. The valley of the Severn is, I believe, one of the minor routes followed by birds on migration, and it certainly exercises a determining influence on the local distribution of the nightingale and wryneck. It is more than likely too that the parties of gulls mentioned above follow the Severn southwards; if so we can understand how it is that Shropshire is visited by sea birds in so much greater numbers than Staffordshire or the other neighbouring inland counties. This also helps to explain the fact that as regards the number of species observed, Shropshire possesses a richer avi-fauna than any other *inland* county in England. On the other hand it may be that this superiority is more apparent than real, and due to the completeness of the records preserved by our veteran naturalists: Shropshire being more fortunate in this respect than her neighbours.

The proximity too of the wild mountain fastnesses of Wales to some extent influences our fauna; chiefly by bringing as autumn or winter visitors such moorland birds as the twite and golden plover, or the larger birds of prey that breed on the mountains, for instance buzzards and falcons. As a curious contradiction it appears that the white-tailed eagle has occurred in Shropshire more frequently than in Wales, whilst years ago a colony of cormorants actually resided in Shropshire. These observations show pretty conclusively that the study of the fauna of this

inland county is one of more than ordinary interest, not only to local residents but to naturalists generally.

NOTE.—Three of the species in the following list—the Canada goose, ring pheasant, and Virginian colin—are not admitted to the British list by Mr. Howard Saunders in his *Manual*.

1. Mistle-Thrush. *Turdus viscivorus*, Linn.
*Locally*, Stormcock, Thrice-cock.

Resident and common all over the county. It nests early in the year usually at a considerable height from the ground and with little attempt at concealment. The parents will defend their domicile with intrepidity, but I have known the carrion-crow bear off the fledglings despite their endeavours at prevention. The local name stormcock is appropriate, for the mistle-thrush will sing loudly in rough weather and seems even to welcome an oncoming storm. Although a hardy species many succumbed to the rigours of the winter of 1895, victims of the intense cold rather than want of food.

2. Song-Thrush. *Turdus musicus*, Linn.
*Locally*, Throstle.

An abundant resident, as well as a partial migrant in autumn and spring. Few of our songsters excel the thrush in beauty of tone, variety and extent of compass. It frequently introduces the notes of other birds into its own song, and in one district where the green woodpecker was exceedingly numerous I noticed several thrushes interpolating now and again a palpable imitation of the harsh laughing cry of that bird. Several examples have occurred of a very pretty variety in which the whole plumage is suffused with a bright buff colour. In 1900 a nest near Ludlow contained a cuckoo's egg among a clutch of thrush's eggs, all of these being much smaller than usual.

3. Redwing. *Turdus iliacus*, Linn.

A regular winter visitor, but in Shropshire its numbers vary greatly from year to year. Speaking generally, it is far less numerous than the fieldfare. It is also much more sensitive to cold, and numbers die in severe winters unless they depart to warmer southern quarters. Many of those that died in the frost of January, 1895, were found to have their crops filled with hips and haws; they seem unable to subsist on an exclusively vegetable diet through a long frost.

4. Fieldfare. *Turdus pilaris*, Linn.
*Locally*, Feltyfare.

An abundant winter visitor, generally arriving in October and remaining till April or even the beginning of May. The earliest date recorded for arrival is 11 September 1899, when a small flock was seen and heard at Bayston Hill. Fieldfares eat berries to a much greater extent than redwings, and consequently fare better in snowy weather. Varieties are rare, but a specimen with the upper parts white was shot near Wellington, 30 November 1901.

5. White's Thrush. *Turdus varius*, Pallas.

A specimen of this large and boldly-marked species was shot by one of Sir Vincent Corbet's keepers at Moreton Corbet, 14 January 1892. It was purchased by the late Mr. W. E. Beckwith and is now in the possession of Miss Beckwith, Radbrook, Shrewsbury.

6. Blackbird. *Turdus merula*, Linn.

A very abundant resident, a handsome fellow, a beautiful songster, but a bad gardener! I have seen him beneath the currant bushes, jumping up and tweaking off the bunches of fruit, which he then devoured with evident gusto. Mr. Charles Kempster saw one catch a small fish in the Tanat near Oswestry. It carried the fish to a stone against which it banged it several times after the manner of a thrush with a snail, and then swallowed it. The weather at the time was hot and dry and the usual diet of worms, etc., therefore probably running short. Pied blackbirds frequently occur, and I have seen one pied *hen*, as well as a cock in which the beak and legs were quite black; also two of a uniform buff colour without spots on the breast.

7. Ring-Ouzel. *Turdus torquatus*, Linn.

A regular summer visitor to the Longmynd, Clun Forest and other moorland districts, but not nearly so numerous here as in the neighbouring Welsh counties. It breeds in the localities named and occasionally nests at Myddle and at other spots some distance away from its usual haunts.

8. Wheatear. *Saxicola œnanthe* (Linn.)

A summer visitant. Large numbers occur on the spring migration, when they may be seen on the low hilltops in parties of twenty or thirty together. On their arrival they are

always very fat. They stay only a few days and then disappear, except those that remain to breed—only a small proportion of the total which passes through the county during April. A few pioneers frequently appear as early as the middle of March.

9. Whinchat. *Pratincola rubetra* (Linn.)
*Locally*, Utick, Tharpe, Egyp.

Common in summer on gorse-clad hills and in meadows along the Severn valley. The nest is often placed beneath a gorse bush, and while the hen bird is sitting the male may frequently be seen perched on the top of the bush cheering his mate with his sweet and pleasing song.

10. Stonechat. *Pratincola rubicola* (Linn.)

Fairly common throughout the summer on moorlands or on low hillsides and breeds in such situations. A considerable proportion remain here through the winter, but they then leave the open hills and seek cultivated lands or the sheltered hollows where thick bushes afford them warm sleeping quarters. I have found them roosting there in the middle of thick clumps of gorse.

11. Redstart. *Ruticilla phœnicurus* (Linn.)
*Locally*, Fiery brantail, Fire-tail.

A summer visitant, very generally distributed throughout the county, particularly in the wooded southern part of it. The nest is usually in a hole in a wall or tree, but I have seen it on the top of a rotten gate-post, and a few years ago there was one on a projecting boss of a lime-tree in the Quarry (public walks), Shrewsbury. The young were safely reared and I watched the old birds feeding them with caterpillars of which each brought about fifty per hour!

12. Black Redstart. *Ruticilla titys* (Scopoli)

Only once recorded in Shropshire—a specimen killed near Wem in 1878. It was purchased by the late Mr. Beckwith and placed in his collection.

13. Redbreast. *Erithacus rubecula* (Linn.)
*Locally*, Robin, Robin Redbreast.

A very abundant resident, always resorting to the neighbourhood of dwellings in winter, but frequenting hedgerows in summer and nesting usually in the banks below them. Occasionally one or two eggs may be found devoid of the familiar red spots, and a nest was found near Shrewsbury in 1898 with five pure white eggs. Mr. John Shaw had a white robin sent to him in November, 1882; it was found dead near Bridgnorth.

14. Nightingale. *Daulias luscinia* (Linn.)

This prince of songsters is capricious in its choice of summer quarters. Speaking in general terms we may say that in Shropshire it is almost confined to the Severn valley, occurring regularly every year between Bewdley and Buildwas, and less regularly as far north as Shrewsbury where the nest has been found once or twice. Further north and west the nightingale can only be regarded as an accidental straggler, though it has occurred from time to time in many scattered localities such as Ludlow, Hadnal, etc., and even on the Cheshire border. The year 1902 was remarkable for the abundance of nightingales in Shropshire; there were at least six pairs in the immediate neighbourhood of Shrewsbury, and I took a photograph of one local nest and eggs.

15. Whitethroat. *Sylvia cinerea* (Bechstein)
*Locally*, Jack Straw, Nettle-creeper, Flaxey.

Plentiful in summer. Its familiar notes may generally be heard towards the end of April. The provincial name 'jack straw' evidently alludes to its loosely built nest of grass-stalks. This and the other members of the genus *Sylvia* are addicted to picking holes in cherries, though they feed principally on insects.

16. Lesser Whitethroat. *Sylvia curruca* (Linn.)

This smaller and greyer species is generally distributed through the county. Although it cannot be considered a common bird it appears to be more numerous in some years than in others. In 1895 I found five nests within a mile of my house, though in other seasons there were but one or two.

17. Blackcap. *Sylvia atricapilla* (Linn.)

This delightful songster is one of the most charming of all our summer visitors, and is fairly numerous in all suitable localities in Shropshire.

18. Garden-Warbler. *Sylvia hortensis* (Bechstein)

Like the blackcap the garden-warbler chiefly affects underwoods and shrubberies. Rather a shy bird, it avoids populous places, and one would look in vain for it in a suburban 'garden.' Its song is very beautiful, and commences with a sudden burst of melody that on a still quiet evening is almost startling. It frequently sings at night, especially if moonlight, and under such circumstances is often mistaken for the nightingale. It is perhaps more abundant in the Wyre Forest than elsewhere in Shropshire, but is fairly common all over the county.

19. Goldcrest. *Regulus cristatus*, Koch.

A charming little bird, resident and fairly numerous, especially where conifers grow, and I have seen it in gardens in the borough of Shrewsbury. In winter its numbers are augmented by arrivals from other parts. Although so small and delicate looking the goldcrest is very hardy, and withstands the rigours of a severe winter better than many birds that appear stronger. The bough of a yew tree is generally selected for slinging the beautiful nest. In winter the goldcrest associates with tits, and it has been seen feeding on the seeds of broom and gorse.

20. Firecrest. *Regulus ignicapillus*, Brehm.

There is little doubt that this species is frequently confounded with the last. It is easily distinguished however by the black line through the eye and the yellowish lines above and below it, as also by the golden colour above the wings. It has been identified eight times in Shropshire, three of the examples having occurred in Shrewsbury. One of these, in December 1882, flew into a shop on the Wyle Cop, and was caught and taken to Mr. John Shaw, the well known taxidermist, who lived close by. Another in Mr. Beckwith's collection was killed by a boy with a catapult. Mr. G. H. Paddock shot one in December 1881, near Newport, and Rev. J. E. Auden another in the garden at Whittington Rectory in the winter of 1890 (*Bygones*, 1897, p. 102). Rocke's list mentions others obtained at Hawkstone, Shrewsbury and Eyton, whilst Mr. Beckwith mentions another shot at Westbury while fighting with a goldcrest.

21. Chiffchaff. *Phylloscopus rufus* (Bechstein)

A common summer visitant, and usually the first to arrive, except the wheatear. Its cheerful but monotonous 'chiff-chaff' is often to be heard from the tree tops as early as the middle of March, long before the branches have put forth their leaves. There is little doubt that the same individuals return each year to their chosen breeding haunt. Mr. Dumville Lees remarks that he always hears the chiffchaff first within a few yards of a particular spot in a wood near his house at Oswestry.

22. Willow-Warbler. *Phylloscopus trochilus* (Linn.)

*Locally*, Peggy Whitethroat, Haybird.

The bright song of this cheery little bird enlivens the way of the naturalist at every turn, and there are few country spots where it may not be heard throughout the summer. The willow-warbler usually puts in an appearance early in April, and almost immediately sets about building its domed nest on the ground amongst coarse herbage. The local name haybird is obviously derived from the materials of the nest.

23. Wood-Warbler. *Phylloscopus sibilatrix* (Bechstein)

*Locally*, Yellow Wren.

This larger and yellower species is easily recognized by its song, which terminates in a long shivering note. It shows a preference for large open woods, and when singing perches on a bough near the top of a good sized tree. In Shropshire it is fairly common in suitable localities, and during the last few years has increased in numbers, being particularly numerous in 1900. The nest closely resembles that of the willow-warbler, but lacks the lining of feathers invariably present in that. The cuckoo has been known to place its egg in the nest of the wood-warbler.

24. Reed-Warbler. *Acrocephalus streperus* (Vieillot)

The numerous meres in north Shropshire, many of which are bordered by extensive reed-beds, are exactly suited to the habits of this bird, and in such localities it is numerous. About Ellesmere a dozen nests may often be found in a single bed of reeds. It is a noisy bird and therefore not easily overlooked in places where it occurs. The nest is made very deep, a necessary precaution to prevent the eggs rolling out when the reeds to which it is attached sway to every passing breeze, and which now and then bend downwards till they are almost horizontal. The nest is occasionally attached to other plants than reeds, such as osiers and the willow herb (*Epilobium*). This species is rare or absent in the southern parts of the county because here there are no suitable reedy pools such as it loves. It is very rare also in the neighbouring parts of Wales.

25. Great Reed-Warbler. *Acrocephalus turdoïdes* (Meyer)

A specimen of this larger and very rare species was shot at Ellesmere about 1886 and preserved by a local man named C. W. Lloyd, from whom it was purchased by Mr. H. Shaw, the well known taxidermist of Shrewsbury. It is now in the possession of Mr. W. S. Brocklehurst, Kempston, Bedfordshire.

26. Sedge-Warbler. *Acrocephalus phragmitis* (Bechstein)

A common summer visitant by no means confined to the vicinity of water, for the nest

may be found quite as often in hedges or even in bushes on hillsides at a considerable elevation. From its habit of singing at night it is sometimes mistaken for the nightingale, though the song is different, but the bird is a great mimic.

27. Grasshopper-Warbler. *Locustella nævia* (Boddaert)

A summer visitor thinly scattered throughout the county but nowhere numerous. Its curious trilling note may generally be heard about the end of April, but the bird itself is seldom seen owing to its shy skulking habits. It returns year after year to the same place, and there is a certain spot near Ironbridge where Mr. F. Rawdon Smith has heard it with unfailing regularity for more than twenty years. It seems generally to prefer damp situations, but is also found on rough ground along the sides of low hills.

28. Hedge - Sparrow. *Accentor modularis* (Linn.)

Resident and abundant everywhere. Its simple but sweet song may be heard at all seasons of the year, whilst its nest with lovely blue eggs is to be found in every hedgerow.

29. Alpine Accentor. *Accentor collaris* (Scopoli)

A specimen of this rare and larger species was caught in a trap in Boreatton Park in 1891. It was identified by Dr. Herbert Sankey, but unfortunately not preserved.

30. Dipper. *Cinclus aquaticus*, Bechstein.

This sprightly and dapper little bird is resident and common on many of the brooks and smaller streams, especially such as have gravelly beds or come tumbling along over rocky ledges. It is particularly numerous in the Longmynd and Wyre Forest districts, and a specimen of the black-bellied variety (*C. melanogaster*) was shot at Church Stretton by Mr. Campbell Hyslop, 15 December 1895. The nest is often built on a ledge beneath a bridge—a large domed structure of moss, etc., with an inner nest of roots and leaves very neatly and compactly built. Sometimes however the exterior presents a slovenly appearance—a confused mass of loose grass stalks, etc. Thus it happens that some nests are much more easily distinguished from their surroundings than others; but the dipper never builds far from the stream where it seeks its insect food, which consists largely of the larvæ of the caddis-fly. In 1901 a pair near Ludlow reared four broods in the season; the first set of eggs were laid in February (J. Palmer).

31. Long-tailed Tit. *Acredula rosea* (Blyth)

*Locally*, Canbottlin, Canbottle, Mumruffin.

This is another charming little bird. Its lovely egg-shaped nest, so compactly woven and ornamented with lichens, etc., is more often found in the midst of a clump of rose brambles than elsewhere, though frequently placed in a gorse bush. It is built early in the year, and I have found eggs in it towards the end of March. Both parents may often be found in the nest at the same time. When sitting the long tail of the bird projects from the aperture of the nest and is turned forwards over its head. In autumn this tit goes about in family parties, flitting in long procession from tree to tree as it progresses through the woodland glades with incessant iteration of its call-note. In winter it associates also with other tits, goldcrests and tree-creepers. Perhaps no British bird has such a large and curious list of local names as the long-tailed tit. I have given the three that are commonly used in Shropshire, where the species is numerous.

32. Great Tit. *Parus major*, Linn.

*Locally*, Ox-eye.

This handsome tit is common all over the county, and like many of its congeners is noted for its predilection for nesting in odd situations, such as pumps, letter boxes, etc. The local name is derived from its note, which is supposed to resemble the words 'ox-eye.' In 1902 Mr. Palmer found at Ludlow a great tit's nest built inside the nest of a blackbird—a remarkable incident, since it is certainly unusual to find this tit nesting in an open place without any kind of cover to the nest.

33. Coal-Tit. *Parus britannicus*, Sharpe and Dresser; *Parus ater* (auctorum)

Fairly common in wooded districts and resident. All the tits are alike energetic and restless little creatures, constantly clambering up and down boughs and prying into every crevice likely to hide an insect, or picking grubs out from the recesses of infested leaf-buds. The coal-tit is however less often seen in our gardens than the blue or great tit, being perhaps the least bit shy of the dwellings of man, though shyness cannot be considered a characteristic trait of the tit family!

34. Marsh-Tit. *Parus palustris*, Linn.

*Locally*, Blackcap.

Although in many parts of England the marsh-tit is comparatively rare, in Shropshire it is plentiful and probably outnumbers the coal-tit in most districts. It nests in holes in

trees, posts, etc., sometimes utilizing a natural cavity, sometimes excavating a hole for itself, in which case it generally removes the chips of wood to a distance. When disturbed whilst sitting I have known the hen bird swell itself out threateningly and emit a puffing noise with the evident intention of repelling intruders. It is a remarkably close sitter. Unlike other tits it does not commonly associate in flocks or parties during winter.

35. Blue Tit. *Parus cæruleus*, Linn.
*Locally*, Tom Tit.

The most numerous, pretty and engaging member of the genus, and if encouraged only a little a constant guest at our windows in winter. A piece of suet or bacon rind suspended in a tree is an irresistible attraction to the blue tit, and it is worth any one's while to provide such fare—he will be amply rewarded by the spectacle of the tit's wonderful attitudes and antics.

36. Nuthatch. *Sitta cæsia*, Wolf.

Although rather local in its distribution the nuthatch is found throughout Shropshire, and is quite common in many places, especially in the south and west. It is numerous in the Quarry, Shrewsbury; and when the avenues of limes there are bare of leaves in winter it may be seen any day running up and down the trunks or over or under the branches. Its name is derived from its method of breaking nuts, etc., by fixing them in a crevice, and breaking the shell by hammering with its beak; but it also eats grubs, etc., and to get at them in wood will hammer with its bill just like a woodpecker till it has made a hole. In winter it not unfrequently descends on to lawns to search for worms, etc., and I have seen it come down and take Indian corn put out in a pheasantry.

37. Wren. *Troglodytes parvulus*, Koch.
*Locally*, Jenny Wren, Kitty Wren.

Resident and numerous. An old cowshed on Haughmond Hill near Shrewsbury was used by a pair of wrens for breeding for many years in succession till the thatch was filled with the nests, over thirty altogether! Wrens frequently build several nests in a season, but lay eggs in only one of them. After the brood are quite fledged they will in cold weather roost all together in a nest. One stormy winter night Mr. Buddicom found the leeward wall of his house at Ticklerton covered with wrens sheltering from the bitter wind. Occasionally I have found the nest placed like a willow wren's merely amongst grass on a hedge bank.

38. Tree-Creeper. *Certhia familiaris*, Linn.

So unobtrusive is the tree-creeper that it frequently escapes notice even in places where it is common, such as the Quarry, Shrewsbury. It frequents the trunks and larger limbs of trees, ascending spirally from the foot up to a certain height and then flitting obliquely downwards to the foot of the next tree. The underparts are usually silvery white, but I have seen examples of a dull grey. As a boy I well remember climbing to a nest containing young only about a week old, and my astonishment when the nestlings (which were quite unable to fly) came scrambling out of the nest and scuttled up the tree above my head!

39. Pied Wagtail. *Motacilla lugubris*, Temminck.
*Locally*, Water-Wagtail.

Common in the neighbourhood of water in summer. In winter the greater number emigrate, though a few may be seen in sheltered situations throughout the year. All the wagtails are insectivorous, but one of these birds was seen to come one summer to pick up crumbs which were put out daily by a lady at Shrewsbury. Upon being followed it was found to have a nest close by in which was a young cuckoo; it fed the latter with the crumbs, and apparently this diet did not disagree, for the cuckoo was safely reared.

40. White Wagtail. *Motacilla alba*, Linn.

It is only within the last few years that this species has been identified in Shropshire. There is little doubt that it occurs in many districts, but is overlooked from its resemblance to the pied wagtail. It is distinguished from that however by the back being light grey instead of black. The 'white wagtail' was first recorded by Mr. G. H. Paddock in 1897. He states that he had seen it several times near Newport. Mr. J. Palmer found a pair near Ludlow in 1896, and they have haunted the same spot every season since. The nest the first year contained five eggs, whilst in 1897 there were four wagtail's and one cuckoo's egg, all now in Mr. Palmer's collection. In 1900 there were three pairs in the neighbourhood, and the same year Mr. Paddock found a pair at Stretton, one of which was a pied, the other a white wagtail. A solitary white wagtail took up its quarters in May 1901, at Money brook near Shrewsbury, and as I drove past every day I had many opportunities of observing it up to the end of August, when the bird disappeared.

41. Grey Wagtail. *Motacilla melanope*, Pallas.
*Locally*, Winter-Wagtail.

Although not the case in many parts of the kingdom, in Shropshire the grey wagtail is more common in winter than summer, especially towards the north. A few pairs nest annually with us in scattered localities, usually along the banks of rapid streams. As a breeding species it is more numerous in the Wyre Forest than elsewhere in the county. It particularly affects small streams, placing its nest on any convenient ledge on the banks.

42. Yellow Wagtail. *Motacilla raii* (Bonaparte)

A regular summer visitant, fairly common and generally distributed throughout the county. It may often be found at some distance from water following cattle in lush meadow grass to pick up the insects disturbed by their feet.

43. Tree-Pipit. *Anthus trivialis* (Linn.)
*Locally*, Titlark, Grasslark, Woodlark.

Common in summer throughout the county, especially in the more wooded southern portion, where it outnumbers the meadow-pipit. The eggs exhibit extraordinary variation in colour and markings, and I had one clutch of a beautiful clear wine colour and very glossy. The nest is frequently built on the ground *against* some upright object, such as a stone or stump.

44. Meadow-Pipit. *Anthus pratensis* (Linn.)
*Locally*, Titlark, Groundlark.

Common in summer, especially in open elevated districts ; but only a comparatively small proportion spend the winter with us. At that season they go about in small companies associated with wagtails, etc., and may often be seen in attendance on sheep penned out amongst turnips.

45. Richard's Pipit. *Anthus richardi*, Vieillot.

This largest of the pipits, distinguished by its long limbs and very long hind claw, has only once been obtained in the county—near Shrewsbury in 1866.

46. Rock-Pipit. *Anthus obscurus* (Latham)

An immature specimen of this shore bird—abundant on the coasts of north Wales—was shot at Berwick near Shrewsbury, 23 November 1877.

47. Golden Oriole. *Oriolus galbula*, Linn.

This brilliant bird has been observed some half-dozen times in the county, and is even reported to have nested near Bridgnorth in 1900. The only well-authenticated instances however were a pair at Harnage in 1866, and one at Neen Savage in May 1886 (Beckwith), and one seen near Kinnerley 23 April 1902.

48. Great Grey Shrike. *Lanius excubitor*, Linn.

A winter visitor that has occurred more than a dozen times in Shropshire. The most recent instances are a fine one caught on limed twigs while in pursuit of a chaffinch near Shrewsbury in 1897, another shot at Monkmoor near Shrewsbury 18 February 1899, whilst in the autumn of the same year one was shot at and wounded by Rev. J. B. Meredith at Kinnerley, and a third shot at Chilton near Shrewsbury by Mr. C. H. L. Burton. A fine old bird was obtained near Oswestry 30 November 1900, and a young example showing the crescentic markings on the breast at Haughmond Hill, Shrewsbury, 25 October, 1902.

49. Red-backed Shrike. *Lanius collurio*, Linn.
*Locally*, Butcher-bird.

This handsome bird is found rather sparingly all over the county, but is more numerous in the southern than the northern part ; in the Wyre Forest it might almost be called common. The eggs are of two very distinct types—with brown and lilac or light red spots; there are no intermediate gradations, nor are eggs of the two types ever found in the same nest. The young are curiously spotted and very different in colouring from the adults.

50. Waxwing. *Ampelis garrulus*, Linn.

A rare winter visitor, recorded at least a dozen times in Shropshire at Hawkstone, Clungunford (4 in February 1829), Oswestry (about 1850), Wroxeter (1863), Shrewsbury (1858 and 1863), Ironbridge, Leebotwood (1866), and Wellington (1871). None have been obtained since then, but the bird was observed at the Clive by Mr. D. H. Meares about 1890.

51. Pied Flycatcher. *Muscicapa atricapilla*, Linn.

Very local in its distribution but appears with great regularity in its chosen haunts. It is more numerous in the neighbourhood of Ludlow and Bishop's Castle than elsewhere in Shropshire, but also occurs in several places round Shrewsbury. In 1900 a pair nested within a mile of my house at Bayston Hill, and I have seen specimens shot within the last

three years at Chilton, Berwick and Westbury.

52. Spotted Flycatcher. *Muscicapa grisola*, Linn.

*Locally*, Miller, Beam-bird.

One of the latest of our summer visitors to arrive here, being seldom noticed before the early part of May. It is common in Shropshire, especially in the south and west. Mr. J. Palmer, Ludlow, has a remarkable series of eggs of the spotted flycatcher showing extraordinary variations in colour and markings, including one clutch of a very pale blue with very faint markings; all the eggs were taken in the vicinity of Ludlow.

53. Swallow. *Hirundo rustica*, Linn.

The advent of the swallow is looked for with interest not only by naturalists but by the general public. The average date of arrival in Shrewsbury is 18 April, and of departure 10 October. Exceptionally swallows have been noted as early as 29 March, and I have several notes of solitary birds being seen up to the end of December. In the Shrewsbury Museum is a unique group of three nests which were built pannier-wise on a wire stretched across beneath the roof of a summer house at Rushbury in 1899. The nests have no support at all except the wire, and it is difficult to imagine how the birds could construct them. Albinos and cream-coloured swallows have occurred several times.

54. House-Martin. *Chelidon urbica* (Linn.)

Arrives generally a few days later than the swallow and is less numerous. Indeed of late years it has diminished considerably, owing in some degree to the pestilent house-sparrow so frequently taking possession of the nest, though possibly the style of architecture of modern houses has something to do with it, for wherever there are suitable eaves they are usually occupied by one or two nests. Atcham Bridge, near Shrewsbury, is a favourite resort of the martin, and there is an almost continuous row of nests from end to end. It is a noticeable fact that the martin habitually flies at a higher level in the air than the swallow, and the swift flies highest of all. Around the market hall at Shrewsbury is to be seen a remarkable series of martins' nests. They are placed *upon the bottoms* of a number of square recesses in the brickwork, above the windows—none are suspended beneath the top. Some are cup-shaped and quite open above; others have a hood at one end; others again are completely domed with entrance at one end, and in two recesses there are two such nests one above the other; whilst others completely fill the recess and have the entrance hole at the top.

55. Sand-Martin. *Cotile riparia* (Linn.)

*Locally*, Sand-Swallow, Bank-Swallow.

The earliest of the swallow tribe to arrive, being seen here not unfrequently about the end of March. Its well known nest-burrows are to be found—generally many together—not only in high steep sandbanks or in fissures in sandstone rocks, but quite low down in the banks of brooks or small sandpits in fields. On the sewage works at Oswestry a large heap of black sand used for filtering is completely riddled with these holes. White and cream-coloured varieties of this bird have been obtained in the county.

56. Greenfinch. *Ligurinus chloris* (Linn.)

*Locally*, Green Linnet.

Very common everywhere. After the breeding season it goes in flocks by itself or in company with other finches, resorting for food to the stubble-fields and hedges, and later on to the stackyards. The nests may often be found in close proximity to one another in a hedgerow. They are rather flat and always have a certain amount of moss in the structure. I have occasionally found eggs devoid of markings.

57. Hawfinch. *Coccothraustes vulgaris*, Pallas.

*Locally*, Grosbeak.

Twenty-five years ago the hawfinch was considered quite a rare bird in Shropshire, but latterly it has increased to such an extent that it has become almost a pest in the gardens, owing to its fondness for green peas. A few years ago no less than seven nests were found in one overgrown hawthorn hedge near Shrewsbury. A favourite place for the nest is on one of the larger forks of an old apple tree, and when seen from below the structure looks uncommonly like a small wood-pigeon's nest.

58. Goldfinch. *Carduelis elegans*, Stephens.

*Locally*, Proud-tailor, Sheriff's man, Seven-coloured Linnet, Redcap, Nicol.

It is gratifying to be able to state that this pretty bird, which was rapidly disappearing owing to the havoc wrought by bird-catchers, is now, thanks to the protection of the law, reinstating itself in our midst in something like its old numbers. On many a gorse-clad hill or quiet orchard may its pretty song and call-note be heard, and the nest with delicately tinted eggs found. In winter it may be seen in little flocks vigorously pulling to pieces the heads of thistles, etc., to get at the seeds, of

which it is very fond. It has many local names all referring to its gay colouring.

59. Siskin. *Carduelis spinus* (Linn.)

A winter visitor of very uncertain occurrence. In some seasons small flocks are seen in many different parts of the county, in others few or none appear. The siskin is not at all shy, and will allow an observer to approach within a few yards, especially in frosty weather or when engaged in feeding on alders—its favourite food. A pair of siskins nested in a fir tree at the Clive in 1898. They were kept under observation by Messrs. C. S. and D. H. Meares until one egg was laid when a wicked jay came and destroyed it! Mr. Meares has the nest and remains of the egg.

60. House-Sparrow. *Passer domesticus* (Linn.)
*Locally*, Eaves-sparrow, Easing-sparrow.

A pest! Infinitely too numerous. It feeds on all kinds of seeds and grain, and its depredations affect equally the gardener and farmer. Not content with this mischief the sparrow drives away the weaker insectivorous birds that would otherwise help to check many of the gardener's insect foes. In particular it is fond of usurping the nest of the house-martin, to the discomfiture of the rightful owners. A ludicrous instance occurred a few years ago when a sparrow took possession of a martin's nest at the top of Lord Hill's Column, Shrewsbury. To attain such a height required strenuous efforts on the part of the sparrow each time it mounted to the nest, and it would have involved much less trouble to build a nest lower down. Pied and white varieties occur.

61. Tree-Sparrow. *Passer montanus* (Linn.)

May be distinguished from the cock house-sparrow by the shape of the black patch on the throat. In the house-sparrow this is large, mottled at the edges, and tapers downwards; in the tree-sparrow it is smaller, rather square, and has well defined edges. The tree-sparrow is rather common in Shropshire, particularly around Shrewsbury. It avoids houses except in winter, and even then goes away to roost. The nest is almost always in a hole in the branch of an ash, oak or pollard willow tree, and I have never met with it in any other situation.

62. Chaffinch. *Fringilla cœlebs*, Linn.
*Locally*, Pyefinch.

Next to the sparrow the chaffinch is certainly the most numerous of all the finches. It shows a preference for cultivated districts rather than woodlands. Although largely resident many leave us for the winter months, the residue, principally males, going about in small flocks on farmlands and hedgerows. Only in severe weather do they approach houses in search of the crumbs that fall from the rich man's table!

63. Brambling. *Fringilla montifringilla*, Linn.

A winter visitor of uncertain occurrence but frequently appears in large numbers in November, when it resorts to beech woods to feed on the mast. On more than one occasion bramblings have been seen during the summer months.

64. Linnet. *Linota cannabina* (Linn.)
*Locally*, Brown Linnet.

Resident and numerous, nesting on hillsides in low bushes as well as in hedgerows. I fancy there are many non-breeding birds—perhaps the sexes are unequal—for at night I have found a dozen or more birds roosting together in the height of the nesting season.

65. Mealy Redpoll. *Linota linaria* (Linn.)

A winter visitor, rare or generally overlooked. Eyton in his *Rarer British Birds* mentions that he had met with it in Shropshire, whilst it has been observed at Eaton Constantine by Mr. Beckwith, at Boreatton Park by Dr. Sankey, at Ford near Shrewsbury in February 1903 by Mr. Geo. Fox, jun., and years ago at Longden-on-Tern by Rev. J. B. Meredith. It may be distinguished from the lesser redpoll by its larger size, lighter colouring, and by the white bar on the wing.

66. Lesser Redpoll. *Linota rufescens* (Vieillot.)

Rather common in winter, when it may often be seen in company with siskins on alders. It sometimes also associates with other finches on the hedgerows. As a breeding species it has rather increased during recent years, and now nests pretty regularly in the neighbourhood of Shrewsbury, Ludlow, etc.

67. Twite. *Linota flavirostris* (Linn.)

Eyton stated that in his day the twite was common in Shropshire and north Wales, whilst Mr. Rocke adds that it breeds on the Longmynd. Without impugning the identification of these authorities, I am bound to say that at the present day careful search has failed to reveal a single instance of the twite's nesting either in Shropshire or north Wales. Indeed the bird itself only occurs very irregularly in flocks during autumn and spring, when it is observed on migration chiefly on the Welsh border and in the northern part of the

county. In 1901 Mr. A. R. Horwood observed it on Corndon during summer, but did not find a nest.

68. Bullfinch. *Pyrrhula europæa*, Vieillot.

Although rather common in all the wooded parts of Shropshire, the unobtrusive habits of the bullfinch cause it to be unnoticed by those unacquainted with its call-note—the constant sign of its presence. It is resident with us, but is much more frequently seen in winter when the trees are bare of leaves, and may then often be found in small parties ; on one occasion I have seen a large flock together near Shrewsbury so numerous as to impart a red tinge to the yew trees on which they settled. The bullfinch sometimes works havoc on plum-trees and other fruit-trees by devouring the buds just as they are opening.

69. Crossbill. *Loxia curvirostra*, Linn.

Generally speaking the crossbill must be considered a winter visitor of uncertain occurrence, though since 1894 when there was a great influx of these birds into Shropshire some few have been seen in different places at all seasons of the year. Amongst Mr. Beckwith's papers is a letter from Rev. W. E. Homfray giving a detailed account of the nesting of a pair of crossbills in a fir-tree near his house at Llanyblodwell in 1880; whilst a brood of quite young birds was noticed at the Clive early in the summer of 1896 by Mr. D. H. Meares.

70. Parrot-Crossbill. *Loxia pityopsittacus*, Bechstein.

Specimens of this larger race are very rare. None have been obtained lately. Pennant mentions two which he received from Shropshire; Mr. Rocke saw two obtained near Oswestry ; and Mr. Beckwith mentions one killed near Shifnal in 1862.

71. Corn-Bunting. *Emberiza miliaria*, Linn.

Rather uncommon and local in its distribution in Shropshire. Found throughout the year in the northern half of the county between Wellington and Market Drayton, whilst it has also bred at Marrington in the extreme west, and about Broseley and Ludlow to the south. During the last few years it has been more in evidence about Ludlow, where Mr. J. Palmer reports several nests, including two containing cuckoo's eggs.

72. Yellow Hammer. *Emberiza citrinella*, Linn.

*Locally*, Writing-master, Goldfinch.

Exceedingly numerous everywhere and a distinct ornament to our hedgerows and commons. The first of the two local names evidently refers to the scribble-like marks on the eggs. The second is a frequent source of misunderstanding, as it properly belongs to another bird of which we have previously treated. The yellow hammer commonly rears two broods in the season. The second clutch of eggs is a small one—usually three —and may be met with as late as the end of August. Mr. J. Palmer has a set of white eggs found near Ludlow.

73. Cirl Bunting. *Emberiza cirlus*, Linn.

Owing to its resemblance to the yellow hammer the cirl bunting is probably frequently overlooked. Specimens have been obtained many years back at Loton and Shrewsbury. A pair was observed by Rev. J. B. Meredith at Kinnerley in the autumn of 1900—probably stragglers from the old-established colony at Glyn-ceiriog near Chirk. Mr. Henry Gray states that the cirl has twice nested near Ludlow years ago; while in 1901 two nests were found there, and one near Bridgnorth by Mr. J. Palmer. The same year the cirl was found breeding in two new districts—near Oswestry by Mr. Rosse Butterfield and at Marrington by Mr. A. R. Horwood.

74. Reed-Bunting. *Emberiza schœniclus*, Linn.

*Locally*, Reed Sparrow, Black-headed Bunting, Black-cap.

Rather common in swampy ground and in the neighbourhood of water generally. The nest is nearly always in a damp place, but is occasionally found at a distance from water. In winter too the bird may sometimes be seen seeking for food in stackyards along with other buntings and finches.

75. Snow-Bunting. *Plectrophenax nivalis*, (Linn.)

This pretty bird occurs in autumn and winter, but rarely in Shropshire, generally in hilly districts. I examined a beautiful male shot at Ruyton-of-the-eleven-towns 8 October 1899; early in the season as it was, it had the white head and neck, etc., most perfectly developed.

76. Lapland Bunting. *Calcarius lapponicus* (Linn.)

An exceedingly rare autumn migrant. The collection at Hawkstone contains two specimens killed near Shrewsbury. One of these —a young bird—was taken in a lark net.

77. Starling. *Sturnus vulgaris*, Linn.

Exceedingly numerous everywhere, and has greatly increased during recent years.

One of the most interesting of the bird's characteristics is the habit of assembling in enormous flocks to roost together at night. In the *Zoologist*, 1900, I have given a list of twenty-five 'roosts' in Shropshire, as well as many details regarding the social economy of starlings at different seasons of the year.

78. Rose-coloured Starling. *Pastor roseus* (Linn.)

This beautiful species has been obtained at least twice in the county in autumn: at Meole, 1841, and at Brockton, Bishop's Castle, 1857, but reports of its more recent occurrence require confirmation.

79. Chough. *Pyrrhocorax graculus* (Linn.)

A specimen of this coast-loving bird is stated in a MS. note of Mr. Beckwith's to have been killed near Gobowen in 1862. Mr. G. H. Paddock records a specimen caught in a pole trap on the Ragleth, Church Stretton, on 24 September 1901; whilst on 15 February 1902, Rev. J. B. Meredith watched one at close quarters at Kinnerley near Oswestry. The chough was plentiful on the west coast of Wales until quite recent times, but is rapidly disappearing from all its old haunts.

80. Jay. *Garrulus glandarius* (Linn.)

In spite of the numbers destroyed every year by keepers the jay still holds its own and is common all over the county, especially in the more thickly wooded districts. It probably owes its comparative immunity to its extreme wariness and to its keeping in the shelter of the trees, where it is difficult to shoot.

81. Magpie. *Pica rustica* (Scopoli)

*Locally*, Bush-mag, Tree-mag.

Like the jay, this handsome and jaunty bird is plentiful, and being less strictly arboreal it is much more frequently seen in flight. The nest, with its fence of thorns, is really a wonderful structure and well worth examination. During a keen frost I once saw a magpie on a high road performing a kind of antic dance round a poor old rook who was too starved and dejected to show resentment. It continued till my approach caused the two to 'disperse.'

82. Jackdaw. *Corvus monedula*, Linn.

An abundant resident both in town and country, in the former breeding mostly in church towers, in the latter in hollow trees, etc. Mr. J. Palmer of Ludlow has a remarkable series of varieties of jackdaws' eggs, including a set all laid by the same bird, in which each egg is thickly coated with a muddy paste. Another clutch is pale blue with no spots, but a slight sprinkling of dark specks, and a shading of deep green.

83. Raven. *Corvus corax*, Linn.

Extinct locally as a resident, though one or two occasionally wander this way from Wales in the winter months. The last instance of its breeding in Shropshire was in 1884. The nest was on a ledge of rock in a disused quarry at Ash Hollow, Little Stretton, and was poked to pieces with poles by some village lads. The raven still breeds in a valley near Chirk, only a few miles outside our border. Formerly it nested on the Wrekin, Longmynd, at Hawkstone, Linley and several places on the Welsh border.

84. Carrion-Crow. *Corvus corone*, Linn.

In many respects the crow is a miniature raven. Formerly very common, it is still fairly numerous in the wilder wooded parts of the county, especially in the south, but in the more open country to the north it has been so much shot down that it may be accounted almost a rare bird and is certainly decreasing. Rooks are frequently called 'crows,' but the distinctions between the habits of the two species are well known and need not be repeated here.

85. Hooded Crow. *Corvus cornix*, Linn.

A winter visitor of rare and irregular appearance. Sometimes one or two years will elapse without a single hooded crow being observed in the county, whilst never more than three or four have been noted in any one winter season. The scarcity of the 'hoodie' here is all the more remarkable considering how common it is as a winter visitor to our eastern counties, whilst in Ireland it is the common species, the black crow being almost unknown.

86. Rook. *Corvus frugilegus*, Linn.

*Locally*, Crow.

Very abundant everywhere and increasing in numbers. Varieties with more or less white in the plumage are frequent, and in 1901 I saw a very pretty one near Rednal with two symmetrical white bars on each wing. The rook is pretty nearly omnivorous and has been known to kill and eat other birds, whilst it is almost as fond of eggs as the jay. Pages might be filled with anecdotes of the many quaint traits of character in this interesting bird.

87. Sky-Lark. *Alauda arvensis*, Linn.

Very numerous throughout Shropshire,

especially in the open country to the north. The greater number are resident, and the joyous song may be heard at almost all seasons of the year, and occasionally even in January and February. In our county larks are now rarely killed for the table, though in former years numbers used to be caught in nets.

88. Wood-Lark. *Alauda arborea*, Linn.

A partial resident, occurring in small numbers throughout the county, but nowhere numerous. In summer it is even less common than in winter, though the nest is said to have been found near Shrewsbury, Ludlow, etc. I have never seen any eggs taken in the county however.

89. Short-toed Lark. *Alauda brachydactyla*, Leisler.

The first specimen recorded in England was obtained near Shrewsbury 25 October 1841, and sent by Henry Shaw to Yarrell, by whom it was described in his well known *History of British Birds.*

90. Swift. *Cypselus apus* (Linn.)

*Locally*, Jack Screamer, Jack Squealer.

This is one of the latest of our summer visitors to arrive, and whatever the weather may be, it puts in an appearance always within a day or two of 5 May, leaving again before the end of August. Of late years the number of swifts in the district has shown a marked increase, although during the same period swallows and martins have decreased. During a thunderstorm in July, 1900, I noticed the swifts mounted to a great height in the air and remained soaring round for about two hours till the storm was over.

91. Nightjar. *Caprimulgus europæus*, Linn.

*Locally*, Fern-Owl, Churn-Owl.

A fairly common summer visitor, occurring in wooded country wherever the ground beneath the trees is covered with bracken, particularly in the Wyre Forest and round Market Drayton and the Wrekin. Occasionally it comes abroad in the daytime, but it is nocturnal in its habits as a rule. The singular jarring cry is uttered whilst the bird is perched lengthwise on a bough—never on the wing—and just as the bird takes flight the pitch of the sound is suddenly lowered.

92. Wryneck. *Iynx torquilla*, Linn.

*Locally*, Cuckoo's Mate (Bewdley).

In Shropshire the wryneck is very local; in the north it is exceedingly rare, whilst in the south it is almost confined to the vicinity of the Severn between Bewdley and Buildwas, though it also occurs to the south-west in the Wyre Forest and around Ludlow. It has bred frequently in the districts last named, and Mr. J. Steele Elliott has a clutch of eleven eggs taken near Bewdley. I found a nest at Broseley containing fresh eggs early in June 1902. The cry somewhat resembles that of the green woodpecker, but is not nearly so loud. I have only once heard of this species in the neighbourhood of Shrewsbury; its distribution in the county appears to coincide almost exactly with that of the nightingale.

93. Green Woodpecker. *Gecinus viridis* (Linn.)

*Locally*, Yawkle.

The loud laughing cry of this bird is one of the most familiar sounds in the wooded portions of the county, and as it is usually uttered during flight from one tree to another it causes the presence of this brilliantly-coloured bird to be noticed even by the unobservant. The green woodpecker is particularly fond of ants, and frequently alights on the ground to search for them. It nests in holes which it excavates for itself in tree-trunks, littering the ground at the foot with the chips of wood therefrom so as to render the chosen tree only too conspicuous.

94. Great Spotted Woodpecker. *Dendrocopus major* (Linn.)

An increasing species, found like the other woodpeckers in all the wooded districts. It nests and seeks its food higher up in trees than the green woodpecker, and is usually to be found on the larger limbs above the trunk. Both the greater and lesser spotted woodpecker have a singular habit of producing a loud noise like the splitting of wood. Exactly how it is caused we do not know, but the bird appears to select a bough of resonant quality and to rattle or vibrate its beak against it with extreme rapidity. It has been surmised that this is a call or signal to the bird's mate, which seems the more probable since the sound is only heard in the springtime. The bird returns again and again to the same spot to go through this performance.

95. Lesser Spotted Woodpecker. *Dendrocopus minor* (Linn.)

Occurs in all the wooded districts and is probably quite as numerous as the preceding, but owing to the fact that it is a small bird and frequents the upper boughs of trees it is rarely noticed; hence it is generally reputed to be much more scarce than it actually is. It nests usually in a hole in a bough near the top of a tree, though I have also known it to

utilize a rotten post in a fence; the same hole being afterwards occupied by a marsh-tit.

96. Kingfisher. *Alcedo ispida*, Linn.

This most brilliantly coloured of our British birds is fairly common on all our rivers and brooks, as also on many of the larger pools. Many are shot every year on account of their beautiful plumage, but in spite of this the kingfisher holds its own and has increased rather than diminished in recent years. There is usually a nest or two each year on the banks of the Severn within the borough of Shrewsbury. Like the kestrel, the kingfisher has the power of suspending itself motionless in the air whilst it scans the water beneath in search of its finny prey.

97. Hoopoe. *Upupa epops*, Linn.

A rare visitor, but has occurred in Shropshire at least a dozen times. No less than three were obtained in the Ludlow and Bridgnorth district in 1895; one of these was pursued and killed by a hawk, whilst another was shot at Claverley, Bridgnorth, in November—a very late date, as the hoopoe is a summer visitor from the south. In April, 1900, one was shot five miles north of Bridgnorth, whilst in the same year another was observed but not shot at Moreton, Oswestry.

98. Cuckoo. *Cuculus canorus*, Linn.

Very numerous and very uniformly distributed over the county in spite of the varied aspect of different districts. It arrives with great regularity on or about 21 April, but occasionally a few odd birds must come earlier, for a fresh egg was taken near Shrewsbury on 16 April 1898, although no cuckoo was heard until some days later. I know of several instances where nests of the wagtail near houses have been used year after year by the cuckoo to deposit its eggs in; this fact leads us to infer that particular individuals return annually to the same locality for breeding purposes.

99. White or Barn-Owl. *Strix flammea*, Linn.
*Locally*, White Owl, Screech Owl.

The senseless persecution to which this owl has been subjected in former years is now gradually diminishing and the bird therefore slightly increasing, but in the winter, when the Protection Act is not in force, large numbers are still killed. It cannot be too widely known that the barn-owl feeds more exclusively on mice even than the other owls, and that in killing it we destroy the farmer's best friend. In Shropshire this species is the most numerous of the owls except in wooded country. It harbours chiefly in old buildings, hollow trees, etc., and sometimes comes abroad in daylight.

100. Long-eared Owl. *Asio otus* (Linn.)
*Locally*, Horn Owl.

In many of the wooded districts, especially round the Wrekin, this is the most numerous of the owls, and it is fairly common throughout the county. It is essentially a fir-haunting species, roosting by day crouched against the trunk. In 1901 the remains of a weasel were found in one of a number of 'pellets' gathered on Shomere Moss near Shrewsbury, which proves that the owl sometimes eats weasels. In the same lot of pellets there were remains of bank voles, wood mice and rats, but none of shrews. I have seen many skulls of sparrows, etc., in pellets from other places.

101. Short-eared Owl. *Asio accipitrinus*, (Pallas)
*Locally*, Woodcock Owl.

Fairly common as a winter visitor. Unlike the other owls it is not usually found in woodlands, but on the ground, and it is frequently flushed by shooting parties when beating up the stubbles or turnip fields. Although it has been known to nest in Cheshire and north Wales it has never been recorded during summer in Shropshire.

102. Tawny Owl. *Syrnium aluco* (Linn.)
*Locally*, Wood Owl, Brown Owl, Hoot Owl.

In some of the wooded districts this is the most numerous of the family, and its musical 'to-whoo' may be heard coming from several quarters at once as one bird answers the call of another. Gamekeepers aver that pheasants dread the brown owl, and that sitting hens will quit the nest or young on its approach. There is a grey race of wood owls in which the plumage is devoid of any tawny hue. A handsome specimen was shot near Shrewsbury 5 December 1901, the only Shropshire example I have seen, though in north Wales the variety is not rare.

103. Tengmalm's Owl. *Nyctala tengmalmi*, (J. F. Gmelin)

A specimen in the Hawkstone collection was shot near Ruyton-of-the-eleven-towns in 1872.

104. Little Owl. *Athene noctua* (Scopoli)

So many specimens of this bird have been introduced into England that it is not surprising that in 1899 one appeared in Shropshire at Willey near Broseley. It was heard on several evenings calling 'kee-awp, kee-awp.'

Subsequently it was caught in a rabbit-trap and lost a leg, but the stump healed and the owl was released again, though it has not been seen or heard since. In the summer of 1902 six little owls were turned loose at Wenlock Abbey by Mr. A. Milnes-Gaskell.

105. Eagle-Owl. *Bubo ignavus*, T. Forster.

A specimen in Ludlow Museum was caught alive near that town about 1868. Another was killed near Bridgnorth in 1873, and a third near Onslow in 1887. The last was an escaped bird, and possibly so were the others.

106. Marsh-Harrier. *Circus æruginosus* (Linn.)
*Locally*, Moor Buzzard (obs.).

In former years this species has been seen and obtained on the Longmynd, etc., and it is said to have bred in Shropshire (A. G. More). It is now exceedingly rare, the last record being one seen by Mr. Dumville Lees near Oswestry 12 January 1886.

107. Hen-Harrier. *Circus cyaneus* (Linn.)

Years ago fairly common, but now rarely met with. It has occurred two or three times within the last ten years, and a nest with four eggs was found on Shawbury Heath 25 May 1890. The eggs and hen bird are in the possession of Mr. J. W. Lloyd of Kington, Herefordshire. In November, 1901, I saw a female at Bayston Hill, and Mr. Dumville Lees observed a male near Oswestry; the same month a female was shot at Bromfield near Ludlow.

108. Montagu's Harrier. *Circus cineraceus* (Montagu)

Rocke records a female shot at Petton about 1860. An immature male was shot by a keeper at Grafton near Baschurch about 6 June 1902. A few days later it was found suspended to the gamekeeper's gibbet just in time to save it for the taxidermist. Mr. A. G. More states that 'in Shropshire Mr. H. Shaw once obtained a female that had been recently sitting.' This was probably the same bird mentioned by Rocke.

109. Buzzard. *Buteo vulgaris*, Leach.

This fine bird was formerly very numerous in the county and bred regularly in the southern part, but it is about thirty years since any nest has been found there. Nowadays the buzzard is chiefly known as an autumn visitor, at which season immature birds frequently wander hither from the parts of central Wales where they still breed. The destruction of the buzzard is very regrettable, since it is almost as harmless and useful a bird as the owl.

110. Rough-legged Buzzard. *Buteo lagopus*, (J. F. Gmelin)

This bird is a migrant, and was never so numerous as the last, but it has been recorded many times in the county in autumn and spring, the most recent instances being at Stretton and Weston in 1895.

111. White-tailed Eagle. *Haliaëtus albicilla*, (Linn.)

This grand bird has been obtained at least eight or nine times in Shropshire, and it is interesting to note that the description of the species in Montagu's *Ornithological Dictionary* was drawn from a specimen killed by Sir Robert[1] Littleton's keeper in Shropshire early in the spring of 1792. In the winter of 1865–6 four were obtained at Badger, Chignell, Halston, and in Corvedale; and others at Hawkstone, March 1883; Bucknell, 9 March 1892; and Craven Arms, 7 November 1896. Mr. John Webster of Stanway, Corvedale, who has the specimen shot there in 1866, saw another eagle near the same spot some twenty-five years later. Most, if not all, were immature, but this eagle takes more than seven years to attain to the typical white tail of the adult. Several of the above were reported as golden eagles, but there is no authentic record of that species ever having occurred here.

112. Sparrow-Hawk. *Accipiter nisus* (Linn.)
*Locally*, Blue Hawk (male).

Still fairly common in spite of relentless persecution but steadily diminishing in numbers.

113. Kite. *Milvus ictinus*, Savigny.
*Locally*, Glede (obs.)

Another fine bird that has been quite exterminated by man. Kites used to breed regularly in the district around Ludlow and Craven Arms, but disappeared from there about thirty years ago. The most recent specimens obtained were shot at Wallop 25 October 1887, and at Bucknell 4 November 1895. The late Mr. A. T. Jebb of Ellesmere observed in the winter of 1891 a kite swoop down and carry off one out of a number of redwings which were feeding on a

[1] Commenting on this in the *Transactions of the Shropshire Archæological Society*, 1887, the late Mr. W. E. Beckwith expresses a doubt whether this is not an error, the eagle being probably the same as was shot at that date on Cannock Chase, *Staffordshire*, by Sir *Edward* Littleton's keeper.

bare patch of snow-covered ground near his house (*Bygones*, 1892, p. 379).

114. Honey-Buzzard. *Pernis apivorus* (Linn.)

Recorded about a dozen times in the county. Mr. Rocke reports a pair trapped at Ferney Hall 2 June 1865, under circumstances that left no doubt they were breeding, whilst three birds were seen in the same district in August 1881—the most recent instance of the occurrence of the species here.

115. Iceland Falcon. *Falco islandicus*, J. F. Gmelin.

Rocke mentions two obtained near Leebotwood about 1860.

116. Peregrine Falcon. *Falco peregrinus*, Tunstall.

Although it is now many years since this fine falcon ceased to breed in Shropshire a year rarely passes without one or two being obtained here, generally immature birds in autumn. These are probably wanderers from north Wales, where the peregrine still breeds on cliffs by the sea and amongst high mountains.

117. Hobby. *Falco subbuteo*, Linn.

A summer visitor, formerly not uncommon here, but now rather rare. Mr. J. Palmer found a pair in 1899 breeding in an old crow's nest in an oak near Ludlow. In May the male was found dead near the tree but the hen promptly obtained a new partner. The young were reared that year and each year since the hobbies have returned to breed in the same nest, whilst others—probably their progeny—have been seen. In 1902 at least two pairs nested in the vicinity. The original nest was occupied as usual, but the female was a new individual which laid four eggs of a different type from the first ; in previous years the clutch was always three eggs of a yellowish colour ; the four eggs in 1902 were much redder. As a rule the eggs were all laid by the end of June.

118. Red-footed Falcon. *Falco vespertinus*, Linn.

An immature bird was caught near Shrewsbury about 1865, and an adult shot near Ellesmere in 1873. This last is in the collection of Mr. Chase, Birmingham. On 18 May 1901, a young female was shot near Shrewsbury and I examined it in the flesh. Amongst the contents of the stomach was a common shrew, an animal which is rarely eaten by any but owls.

119. Merlin. *Falco æsalon*, Tunstall.

*Locally*, Blue Hawk.

Occurs not unfrequently in autumn and winter, and breeds on the Longmynd and Stiperstones.

120. Kestrel. *Falco tinnunculus*, Linn.

This is the most numerous of the falconidæ in Shropshire and is fairly common in districts where it is not persecuted. As it feeds principally on mice it ought to be protected instead of being mercilessly shot down. It generally lays its eggs in the old nest of some other large bird, such as the crow or magpie.

121. Osprey. *Pandion haliaëtus* (Linn.)

This splendid bird, the only raptor that feeds exclusively on fish, is only an occasional wanderer to our county, but it has been obtained here eight or nine times. The most recent instance was on the Isle Pool near Shrewsbury, 30 October 1889.

122. Cormorant. *Phalacrocorax carbo* (Linn.)

It is remarkable that the cormorant should visit an inland county like Shropshire almost every year and sometimes in numbers. Between 1820 and 1840 a small colony lived on the Severn near Mountford Bridge though they never nested. In 1900 a small party stayed by Bomere Pool for several weeks. Most of the specimens shot here have been immature, but in April 1901, an adult male in full breeding plumage was obtained near Shrewsbury. The mere at Ellesmere is a favourite haunt of the cormorant, and one or two are frequently to be seen, especially in autumn, fishing in the lake or standing on posts in the water with drooping wings expanded to catch the warm rays of the sun.

123. Shag or Green Cormorant. *Phalacrocorax graculus* (Linn.)

Much more rarely noted here than the last, but immature birds have occurred at Ellesmere, Hawkstone, Longville and Polmere, the last in September 1897.

124. Gannet or Solan Goose. *Sula bassana*, (Linn.)

Another sea bird that has found its way to our inland county some eight times, generally brought thither by rough weather. In 1863 one was caught alive on the Clee Hills by a keeper, and is now in Ludlow Museum. The fine old bird in Shrewsbury Museum was obtained out of three found exhausted at Stapleton 24 April 1896, whilst another adult was shot at Kinnerley 7 August 1900.

125. Common Heron. *Ardea cinerea*, Linn.

*Locally*, Crane, Erne.

Often seen winging its way across country or standing motionless in the shallows of our

pools and rivers. The principal heronry is at Attingham Park near Shrewsbury, whilst there are others at Oakley and Walcot Parks to the south, and Halston Park and Colemere to the north. The old heronry on Ellesmere Mere has been deserted for many years. Herons breed very early in the year, but seldom rear more than one brood.

126. Squacco Heron. *Ardea ralloides*, Scopoli.

A specimen in the collection at Ticklerton was killed on the Brown Clee Hill 24 July 1834.

127. Night-Heron. *Nycticorax griseus* (Linn.)

An immature bird was shot in July 1830 near Wroxeter by Mr. Stanier.

128. Little Bittern. *Ardetta minuta* (Linn.)

Pennant mentions one shot in the Quarry, Shrewsbury, early in last century. One was obtained at Crosemere 19 May 1880, and on 29 May 1894 a beautiful specimen was shot at Ditton Priors and subsequently presented to Shrewsbury Museum by Mr. Watkin Watkins. In July 1881 a male was shot at Petton, and a female at Marbury, Whitchurch. These were probably a pair and the hen would have laid eggs shortly had she been spared.

129. Bittern. *Botaurus stellaris* (Linn.)

Eyton records two nests at Cosford, Shifnal, in 1836. Three young were reared in one of them. Since that time the bittern has ceased to be a resident, though wanderers still visit us almost every winter. The winter of 1899–1900 was remarkable for the number of bitterns which appeared in England. In January I had the pleasure of watching a pair at Ellesmere, and it was marvellous to see how the birds stood motionless amongst the rushes in attitudes which made them look just like stumps or pieces of dead wood or heaps of rushes. One bittern stayed there two months and re-appeared in the same place twelve months later.

130. Glossy Ibis. *Plegadis falcinellus* (Linn.)

In 1854 a pair were seen at Sundorne Pool near Shrewsbury, one of which was shot. It was taken to the late Mr. W. Franklin, taxidermist, and preserved by him.

131. Bean-Goose. *Anser segetum*, J. F. Gmelin.

In Shropshire this is, perhaps, the most numerous of the grey geese, but as the wild geese are seldom shot—though often seen flying—it is difficult to be sure of the species. Three were shot out of a flock of eight at Oakley Park in 1861. In the winter of 1878–9 Mr. J. E. Stanier shot two out of a flock of about forty which stayed round Uppington several weeks. One was shot out of a large flock at Coalport in 1881. A flock of seven appeared at Kinnerley in February 1888; one was wounded but got away whilst another was killed. Another was obtained at Lutwyche, 17 January 1891. Like the other wild geese this species is only a winter visitor, and generally appears in frosty weather. A very large flock numbering over a hundred appeared near Wenlock in December 1901, and stayed there several days; one was shot.

132. Grey Lag-Goose. *Anser cinereus*, Meyer.

This, the ancestor of our domestic geese, is exceedingly rare in the wild state, and it is many years since one has been obtained in Shropshire. Former writers were apt to assume that most of the wild geese seen here were grey lag-geese, but such is far from being the fact, and there is little doubt that many were bean-geese.

133. White-fronted Goose. *Anser albifrons*, (Scopoli)

This smaller species does not seem to visit us very often. Two were obtained near Ludlow in February 1855; one in the same district 14 December 1871; and two out of a flock of eight at Ruyton 1 January 1891. The most recent occurrence is a specimen shot at Kinnerley 25 March 1901, whilst in December 1902 I saw a flock of twenty flying southwards over Bayston Hill, which I believe were of this species.

134. Pink-footed Goose. *Anser brachyrhynchus*, Baillon.

Has been obtained on five or six occasions in Shropshire. In his MS. notes the late Mr. Beckwith mentions having examined three killed here in January 1891. One was shot at Bryntanat near Oswestry 18 February 1895.

135. Barnacle-Goose. *Bernicla leucopsis* (Bechstein)

Eyton and Rocke state that this goose had been obtained in Shropshire many years ago, but no recent instance is known.

136. Canada Goose. *Bernicla canadensis.*

In a semi-domesticated state numbers of Canada geese reside and breed at Ellesmere, Hawkstone, etc., whilst single birds often appear during winter on the Severn and on pools in different parts of the county. Although these are apparently wild there can be

no doubt that they are descended from domesticated parents.

137. Brent Goose. *Bernicla brenta* (Pallas)

A very rare winter visitor. The most recent occurrences are at Shrewsbury in 1861, on the Longmynd in October 1883, at Combermere on the edge of Cheshire 5 November 1895, at Pentreheylin near Oswestry 8 October 1898, and at Cressage in January 1903.

138. Whooper Swan. *Cygnus musicus*, Bechstein.

*Locally*, Wild Swan.

A rare winter visitor. In 1837 there was an extraordinary influx, when at least twenty-five were shot. In January 1891, one was obtained at Linley and in 1892 two at Halston, whilst in the winters of 1892–3, 1899–1900, several were seen at Ellesmere.

139. Bewick's Swan. *Cygnus bewicki*, Yarrell.

The rarest of the three swans. Eyton mentions one shot on the upper Severn about 1835. Mr. Rocke's specimen was killed on the Severn about 1862. On 20 December 1899, a flock of twenty adults and three cygnets appeared on the mere at Ellesmere. They stayed there three days and then separated, about half of them going to Whitemere. On 4 January 1900, by the courtesy of Mr. Brownlow Tower, I was shown one cygnet that had remained on this pool after its companions departed. The keeper there feeds the waterfowl regularly and stated that one day all the Bewick's swans came out on the bank and fed with the other birds.

140. Mute Swan. *Cygnus olor* (J. F. Gmelin)

Common in a domesticated state on ornamental waters. In severe winters large numbers of wild birds, mostly immature, sometimes appear. In the winter 1899–1900 these were so numerous that there could be no reasonable doubt that they were visitors from the north—not the progeny of local birds; many were shot in different parts of Shropshire, chiefly north of Shrewsbury.

141. Sheld-Duck. *Tadorna cornuta* (S. G. Gmelin)

This handsome species is common on the Welsh coast, and it is probably from thence that the birds come that appear here occasionally in winter. Small flocks visited us in 1875–6 and 1884–5. A male was shot at Preston on the Weald moors in February 1890, and a female at Betton Pool 28 February 1900, and another at Onibury 28 February 1902.

142. Mallard or Wild Duck. *Anas boscas*, Linn.

Abundant on pools, etc., in winter, whilst a considerable proportion are resident. They nest very early in the year, having been known to lay eggs even at Christmas, and frequently rear two broods in the season. Hybrids with the pintail and other ducks have occurred several times amongst semi-domesticated birds.

143. Gadwall. *Anas strepera*, Linn.

Very rare. A specimen was killed on the Severn near Shrewsbury about forty years ago. One was shot 1 November 1889, out of a pair at Winsley by the late Mr. J. Whitaker, for whom the specimen was preserved, while a fine adult male was shot by Mr. C. R. Wingfield on the decoy at Onslow 2 October 1899.

144. Shoveler. *Spatula clypeata* (Linn.)

*Locally*, Spoonbill.

Generally speaking a winter visitor of uncertain occurrence, though at that season small parties are sometimes seen. It has nested during the last ten years at Burlington Pool, Newport (Paddock), Weston Park, Shifnal (Bridgeman) and Shrawardine Pool (Harries), whilst a young bird was shot at Hencote in August 1869, that had evidently been reared there.

145. Pintail. *Dafila acuta* (Linn.)

Not very uncommon in winter, though it is not met with every year. The keeper at Oakley Park, Ludlow, states that a pair nested on a pool there in 1881, whilst Mr. Paddock reports that in 1897 a pintail paired with a mallard at Caynton near Newport, and hatched nine eggs.

146. Teal. *Nettion crecca* (Linn.)

Frequent in winter, when it sometimes appears on our pools in large numbers. A good many pairs remain with us through the summer and nest on the more secluded pools and bogs.

147. Garganey. *Querquedula circia* (Linn.)

Very rare, and none have been met with lately.

148. Wigeon. *Mareca penelope* (Linn.)

Only occurs here in winter but is sometimes numerous in severe weather, though it rarely stays long in one place.

149. Pochard. *Fuligula ferina* (Linn.)

*Locally*, Poker, Red-headed Poker.

Visits us every winter, when it resorts to our larger pools and frequently stays for weeks together. The only instance of its breeding here was in 1875, when a nest with slightly incubated eggs was found by Colonel Bridgeman at Tong Mere near Shifnal on 14 May.

150. Ferruginous Duck. *Fuligula nyroca* (Güldenstädt)

Rev. W. R. Jones of Churchstoke, just on the border of Montgomeryshire, informs me that a duck which he is certain belonged to this species—it had white eyes—was shot near there in the winter of 1889–90. Against his advice it was cooked, but proved very unpalatable.

151. Tufted Duck. *Fuligula cristata* (Leach)

Visits Ellesmere Mere in large numbers every winter, and scattered individuals or small parties then visit also other pools in the county. As a breeding species it is decidedly increasing. At Hatton, Shifnal, one or two pairs have nested pretty regularly for over forty years, whilst others have bred in steadily increasing numbers ever since 1880 at Weston Park on the borders of Staffordshire. A third colony began to nest on Sandford Pool near Whitchurch in 1880, and there were six pairs there in 1901. At this last place the ducks are only summer visitors, but at Weston they are resident throughout the year. A pair nested near Gatacre Hall, Bridgnorth, in 1901.

152. Scaup-Duck. *Fuligula marila* (Linn.)

This marine duck occasionally wanders here in winter but adults are decidedly rare. An old male was shot on Shrawardine Pool in 1895, a nearly adult male at Kinnerley 6 January 1899, and a party of three visited Marton Pool, Baschurch, in December 1900. One that was shot was a female, whilst another seemed to be an adult male.

153. Goldeneye. *Clangula glaucion* (Linn.)

Frequent on the Severn and larger pools in winter, especially in severe weather.

154. Long-tailed Duck. *Harelda glacialis*, (Linn.)

Beckwith records one killed on Tong Pool 6 November 1871, and in a letter to Mr. Ruddy mentions another killed in Shropshire in the winter of 1887–8, at which time the species occurred numerously in England. On 20 November 1881, Mr. Beckwith watched for some hours a party of four on Ellesmere Mere, and on 13 November 1885, he saw on Whitemere a male just getting its adult plumage.

155. Common Scoter. *Œdemia nigra* (Linn.)

Has occurred several times in winter. The most recent instances are five shot out of a flock of twenty on the pool in Acton Burnell Park 24 November 1892, and a male near Ironbridge in 1896.

156. Velvet-Scoter. *Œdemia fusca* (Linn.)

An adult male in the late Mr. Bodenham's collection was found exhausted and unable to fly near Shrewsbury in November 1866.

157. Goosander. *Mergus merganser*, Linn.

Not infrequent in winter on the Severn and sometimes on our larger pools. In 1876 a flock of sixteen stayed for two months on the pool at Hawkstone, and in the winter of 1885–6 two large flocks numbering between twenty and thirty birds each frequented the Severn between Atcham and Cressage ; several were shot. A party of four were on Betton Pool near Shrewsbury in 1899 so late in the year as 6 April.

158. Red-breasted Merganser. *Mergus serrator*, Linn.

Much less frequently met with than the goosander and never in flocks. The only adult male ever shot here was obtained near Minsterly in November 1889, whilst a female was shot at Burway, Ludlow, 23 February 1895.

159. Smew. *Mergus albellus*, Linn.

Only rarely straggles hither. In Mr. Rocke's collection is an adult pair obtained years ago near Shrewsbury and a male at Clungunford. Others have been seen or obtained at Hawkstone, Melverley, Bromfield and Ellesmere. The most recent occurrences are a female shot on Betton Pool 13 February 1901, which I examined in the flesh ; and a young male assuming adult plumage obtained at Ensdon 3 February 1903.

160. Ring-dove or Wood-Pigeon. *Columba palumbus*, Linn.

*Locally*, Quice, Quist, Queest.

Exceedingly numerous, and has increased greatly of late years. This has resulted in a change of habit, the pigeons having become partially migratory. They assemble in winter in very large flocks, which stay in one district for a few days till the supply of food is exhausted and then move off elsewhere. An albino was reared from the nest near Market Drayton in 1894 (*Field*, Nov. 1894). The winter of 1901–2 witnessed the immigration

of enormous numbers of wood-pigeons and stock-doves into Shropshire—apparently an alien race. Many of them which were shot were found to be diseased ; they were covered with wart-like excrescences.

161. Stock-Dove. *Columba œnas*, Linn.
*Locally*, Rock-Dove, Blue Rock.

This species may be distinguished from the wood-pigeon by the absence of white in the plumage. It is very common in Shropshire, but not so numerous as the last.

162. Rock-Dove. *Columba livia*, J. F. Gmelin.

There is some doubt whether the rock-doves occasionally shot in the county are truly wild, or tame pigeons reverted to a wild state. Mr. R. B. Benson found a small colony about 1884 nesting in deep crevices in a detached part of Wenlock Edge, but subsequently they were ejected by jackdaws. In the Ludlow district there are numbers of rock-doves, descended from birds which escaped from pigeon-shooting matches which were frequent thereabouts in former years. Curiously enough these birds nest *in trees*, probably because there are few suitable rocks in the neighbourhood.

163. Turtle-Dove. *Turtur communis*, Selby.
*Locally*, Wrekin-Dove.

A summer visitor in large and steadily increasing numbers, and pretty evenly distributed throughout the county. Apparently a considerable number do not breed, for on more than one occasion I have met with flocks in the middle of the summer.

164. Pallas's Sand-Grouse. *Syrrhaptes paradoxus* (Pallas)

Only two of the irruptions of this Asiatic bird into Britain seem to have affected Shropshire. In 1863 a flock of about twenty were seen near Ludlow, and two were killed out of a large flock near Oswestry in June. In 1888 three were seen near Market Drayton on 22 June, and about the same time several were shot, and one killed by flying against telegraph wires near Craven Arms.

165. Black Grouse. *Tetrao tetrix*, Linn.
*Locally*, Grey-hen (female).

Rare in the northern part of the county but fairly common in the south, especially about Ludlow and Bishop's Castle. Hybrids between this species and the pheasant have occurred, one such, from Plowden, being figured in the first edition of Yarrell. Specimens are at Plowden Hall, and in the collection of Rev. F. C. R. Jourdain, Clifton, Derbyshire. Three examples of this hybrid were obtained in different places near Shrewsbury in the winter 1902–3, though no black-game were known to exist in that particular neighbourhood.

166. Red Grouse. *Lagopus scoticus* (Latham)

Plentiful on the Longmynd, Clun Forest and Clee Hills. About 1840 a few pairs were imported from Yorkshire and turned out on the Longmynd. Prior to that date it is said that there were no red grouse on these hills, though it is hard to believe that a district so eminently suitable should not have been stocked from the moors in the adjoining Welsh counties, where grouse have abounded for centuries.

167. Pheasant. *Phasianus colchicus*, Linn.

The original dark breed is still found in many parts of the county, but it is steadily disappearing by interbreeding with the next species.

168. Ring-Pheasant. *Phasianus torquatus.*

Although introduced here at a very much later date than *P. colchicus*, the light coloured ring-pheasant has increased so rapidly that it far outnumbers the older species. Hybrids between the two are more numerous than either, whilst all the species of pheasant interbreed with one another as well as with domestic fowls, or even with grouse. In May 1900, Mr. J. Palmer found a pheasant sitting on eight eggs in an old sparrow-hawk's nest 30 feet from the ground in a spruce tree.

169. Partridge. *Perdix cinerea*, Latham.

Very common in arable country. White partridges have been met with several times, and in 1887 there were five in a covey of twelve at Ensdon. Specimens also commonly occur with white instead of brown horseshoe mark on the breast. Eggs are sometimes laid in autumn (*Field*, 30 Nov. 1882). Several of the beautiful 'spangled' and 'rufous' varieties of partridge have been obtained in Shropshire during recent years.

170. Red-legged Partridge. *Caccabis rufa* (Linn.)
*Locally*, French Partridge.

Single individuals are met with now and then, but the bird is decidedly uncommon. Introduced eggs were hatched under common partridges in the parks at Willey and Weston but the 'red-legs' proved so quarrelsome and such indifferent 'sport' that as far as possible they were afterwards destroyed. Mr. A. R. Horwood tells me that one or two pairs bred during the last two years at Marrington. They were not introduced there but came of their own accord, and unlike the birds men-

tioned above, were of a peaceable disposition. Several have occurred in the Ludlow district though not introduced there; a nest with fifteen eggs was found in 1902.

171. Quail. *Coturnix communis*, Bonnaterre.

A summer visitant in small numbers, known to have nested in Shropshire at least half a dozen times, the most recent instances being at Hinnington, Shifnal, in 1893 (eighteen eggs, G. H. Paddock) and at Snitton near Ludlow 2 June 1894 (ten eggs, J. Palmer). Quails were unusually numerous in 1893.

172. Virginian Colin. *Ortyx virginianus.*

A specimen of this introduced American bird in the Hawkstone collection was shot on the estate. It was probably a wanderer from some distance, as none are known to have been introduced hereabouts.

173. Corn-Crake or Land-Rail. *Crex pratensis*, Bechstein.

Plentiful on lowland meadows in summer. There is no doubt that occasionally individuals winter here, probably on account of some infirmity, as specimens have been shot in December and January. In 1884 a lady at Chirk had a tame corn-crake reared from a nestling; it was two years old, so had stayed through two winters, though free to run about.

174. Spotted Crake. *Porzana maruetta*, (Leach)

Met with pretty frequently in Shropshire on the autumn migration. There is no evidence that it has ever nested in the county, but it has been seen and obtained in winter. Rev. J. B. Meredith once shot two at Kinnerley about Christmas, and Mr. Henry Gray states that a pair stayed through a winter at Ludlow, taking up their quarters beneath a wood-stack; from time to time they were seen to run out and capture a worm, retreating again to devour it.

175. Little Crake. *Porzana parva* (Scopoli)

A specimen of this small species, which is exceedingly rare in the west of England, was shot at Petton Park by Mr. H. Tatton in the autumn of 1898. He stuffed it himself and still has the bird, though he kindly allowed me to send it for examination to Mr. Howard Saunders who confirmed the identification.

176. Water-Rail. *Rallus aquaticus*, Linn.

*Locally*, Water-Weasel (Ellesmere district).

Rather common along the Severn in the flat parts of its course as well as round pools where the shores are marshy. It is frequently caught on nightlines set for eels in the river. Owing to its skulking habits it is generally reputed to be rare, for it is hardly ever seen except in winter when the herbage is too scanty to conceal it. The nest has been found several times near Shrewsbury.

177. Moor-hen. *Gallinula chloropus* (Linn.)

*Locally*, Coot, Water-hen.

Very abundant on ponds, small pools and rivers, and unlike the water-rail not at all shy, for if encouraged it will come close up to houses to take food put for it. About 1876–7 there were some very pretty pied water-hens at Attingham Park, but the breaking down of the weir and consequent draining of their favourite haunt caused them all to disappear. The name 'coot' is in Shropshire very generally applied to the moor-hen, the coot proper being always distinguished by the prefix 'bald-headed.' Several specimens of the extraordinary hairy-plumaged variety have been obtained in Shropshire (see *Zoologist*, 1901, p. 108).

178. Coot. *Fulica atra*, Linn.

*Locally*, Bald-headed Coot, Bald Coot.

In summer time the coot is abundant on all our larger pools and meres, where it breeds. It only resorts to the river when the pools begin to freeze. It is very pugnacious towards other waterfowl and will kill ducklings by striking them on the head. A curious variety of a light brown colour was shot at Newport in 1894.

179. Crane. *Grus communis*, Bechstein.

Mr. Rocke gives an account of one being killed and eaten (!) at Trippleton on the Teme.

180. Great Bustard. *Otis tarda*, Linn.

The only evidence of the occurrence of this fine bird in Shropshire is contained in a letter to the late Mr. Beckwith from the late Rev. R. W. Gleadowe. It describes in detail how his father-in-law saw a pair on the Longmynd in the summer of 1826. Certainly there is no likelier spot in the county for the bustard than this open moorland, and there is no reason to doubt the identification of the bird.

181. Little Bustard. *Otis tetrax*, Linn.

A female specimen obtained at Edgmond in the spring of 1883 is still in the collection of the late Mr. Beckwith. It was shot by a labourer on a field.

182. Stone-Curlew. *Œdicnemus scolopax* (S. G. Gmelin)

This bird is recorded by Mr. Rocke as having occurred once only on Ponsart (Pontesford) Hill.

183. Dotterel. *Eudromias morinellus* (Linn.)

This pretty plover is very rare, and there is no reason to suppose that it was ever common here. It has occurred more frequently on the Longmynd than elsewhere, and Mr. W. S. Buddicom tells me he has several times seen it in autumn on these hills. A specimen from there in the collection at Ticklerton was shot about 1840, whilst Mr. R. B. Benson shot one at Lutwyche in 1871. On 12 May 1886, three were killed out of a small flock near Wellington and identified by Rev. W. Houghton.

184. Ringed Plover. *Ægialitis hiaticula* (Linn.)

*Locally*, Ringed Dotterel.

Occasionally wanders as far inland as Shropshire, where it has been met with some four or five times on the Severn near Cressage. A beautiful male was obtained by Mr. Beckwith in April 1876, by a small pool on Charlton Hill near Wroxeter.

185. Golden Plover. *Charadrius pluvialis*, Linn.

*Locally*, Whistling Plover.

Flocks of varying size visit us every autumn and spring. Usually they merely pass through, but sometimes remain for a few days in one place. Although the Longmynd and Clun Forest seem suited to its habits, the golden plover has never been known to breed with us. In 1899 and 1900 a solitary bird stayed throughout the summer near Shrewsbury, and a small flock haunted the neighbourhood of Roden from September 1898 to end of March 1899.

186. Lapwing. *Vanellus vulgaris*, Bechstein.

*Locally*, Plover, Green-Plover.

Exceedingly numerous on all the open parts of Shropshire and seems to increase. In frosty weather, if the ground is frozen for any length of time and the supply of food thus cut off, the peewits depart in large flocks to the Welsh coast and remain there till the frost breaks. 'Plovers' eggs' are taken in numbers for the table, but have never been made a marketable commodity in Shropshire. Several instances of five (and one of six) eggs in a clutch have occurred; also white and cream coloured varieties of the bird.

187. Turnstone. *Strepsilas interpres* (Linn.)

Essentially a shore bird. Only known to have occurred twice in the county near Atcham and Rednal, both more than fifty years ago.

188. Oyster-catcher. *Hæmatopus ostralegus*, Linn.

Another shore bird, obtained only three or four times in the county. Mr. Brownlow Tower observed a pair on Ellesmere Mere 29 March 1899, and one was shot on Betton Pool 11 September 1902.

189. Avocet. *Recurvirostra avocetta* (Linn.)

Pennant records the avocet as occurring on the Shropshire meres a good deal more than a century ago.

190. Grey Phalarope. *Phalaropus fulicarius* (Linn.)

This pretty little bird not unfrequently visits Shropshire in autumn and winter, though never more than two have been observed together. It is very tame and resorts rather to farmyard ponds than to pools or streams, running about on land or swimming on the water with equal facility.

191. Red-necked Phalarope. *Phalaropus hyperboreus* (Linn.)

In a letter to Mr. Beckwith Mr. G. H. Paddock mentions two shot near Newport in the autumn of 1890. There is no other record, and the above is doubtful as the whereabouts of the specimens is unknown.

192. Woodcock. *Scolopax rusticula*, Linn.

Fairly common from autumn to spring in all the wooded districts. The numbers remaining also through the summer have increased of late years, and many nests have been found from time to time, mostly in the southern half of the county. Mr. J. Steele Elliott reports that numbers breed every year in the Wyre Forest.

193. Great Snipe. *Gallinago major* (J. F. Gmelin)

*Locally*, Double Snipe, Solitary Snipe.

A winter visitor; obtained several times in Shropshire. Mr. G. H. Paddock shot a pair near Newport in the hard frost of 1878–9, and one was shot by Mr. Salter near Minsterley 23 September 1901.

194. Common Snipe. *Gallinago cœlestis*, (Frenzel)

*Locally*, Full Snipe.

Common from autumn to spring in the

marshy situations which it loves, and many nest with us annually in such places, especially amongst the hills. Snipe are more plentiful with us in August and September than at any other season.

195. Jack Snipe. *Gallinago gallinula* (Linn.)
*Locally*, Half Snipe.

Occurs every winter in fair numbers, though never nearly so numerous as the common snipe. Although never known to nest here, single birds have been observed in April ; and on 26 April 1876, Mr. Beckwith saw a pair near Whixall Moss.

196. Bonaparte's Sandpiper. *Tringa fuscicollis*, Vieillot.

The first specimen of this rare American visitor obtained in Britain was shot at Stoke Heath prior to 1839 ; it is in the Hawkstone collection. The bird was recorded by Eyton as 'Schinz's sandpiper.'

197. Dunlin. *Tringa alpina*, Linn.

Although common on our sandy shores the dunlin rarely wanders so far inland as our county. The few instances recorded have been mostly between autumn and spring, but a specimen in partial summer dress was shot at Mount Pleasant, Shrewsbury, 18 May 1899. On 14 December, the same year, another was obtained on the river Tern near Wellington.

198. Curlew-Sandpiper. *Tringa subarquata* (Güldenstädt)
*Locally*, Pigmy Curlew.

Another shore bird that has only been met with on two occasions here. The first was shot near Oxon, Shrewsbury, in 1836. On 9 September 1887, a flock of between thirty and forty was encountered by a shooting party on a turnip field at Barrow, Broseley. Four or five were shot, of which one is in the collection of the late Mr. Beckwith and another at Willey Park.

199. Purple Sandpiper. *Tringa striata*, Linn.

Although recorded by Rocke as having been obtained here years ago, no recent instance of its occurrence is known. The species is essentially a shore bird, and is not uncommon on the Welsh coast.

200. Knot. *Tringa canutus*, Linn.

Recorded on several occasions on the Severn between Cressage and Shrewsbury. On 13 December 1899, an adult was shot at Sweeney, Oswestry, and another at Nesscliffe.

201. Sanderling. *Calidris arenaria* (Linn.)

The keeper at Woodhouses, Rednal, shot one on the estate about 1856. It is preserved with other birds in a case in the possession of his widow, Mrs. Gell, Bayston Hill, Shrewsbury.

202. Ruff (♀ Reeve). *Machetes pugnax* (Linn.)

Mr. Beckwith records one killed near Melverley in December 1861, and another near Buildwas in January 1867, both during hard frosts. In a letter written to him by Mrs. H. Leslie the writer records two reeves seen in the old river bed at Aber-Tanat, Oswestry, one of which appears to have been shot and forwarded to Mr. Beckwith. This is especially noteworthy as occurring in summer—11 May 1881.

203. Common Sandpiper. *Totanus hypoleucus* (Linn.)
*Locally*, Summer Snipe.

A regular and fairly common summer migrant, frequenting the banks of nearly all our streams and rivers and nesting there, especially near the Welsh border. It has also been met with here in winter on at least three occasions (*Zool.* 1884, p. 73). The old bird has been seen to fly off carrying a young one on her back.

204. Green Sandpiper. *Totanus ochropus* (Linn.)

Has been met with here at all seasons of the year, though most frequently from December to March, when it is not at all uncommon. It is said to lay its eggs in old nests of the blackbird, etc., and although it has never actually been found breeding here, there is presumptive evidence that it may have done so. In June 1863, the late Henry Shaw saw a pair on Condover brook that he was convinced from their behaviour had a nest near. One was shot at Clun 1 August 1891, and another at Cound 13 July 1894, whilst I saw one at Acton Burnall 12 July 1900, and in July 1901, examined a specimen that had been recently shot in the same neighbourhood.

205. Redshank. *Totanus calidris* (Linn.)

Has occurred several times on the Severn and Teme. The most recent instances are one shot near the Dayhouse, Shrewsbury, on 6 April 1892, and another near Wem 13 March 1903. The call of the redshank may often be heard on fine quiet moonlight nights as it flies across overhead. It has never nested

here. A MS. note of Mr. Rocke's records that in the winter of 1877 a flock stayed for some time near the Heath Pool, Hopton Heath; several were killed and eaten.

206. Greenshank. *Totanus canescens* (J. F. Gmelin)

A rare autumn visitor. The most recent occurrences are at Pontesbury in September 1885; at Hinstock in October 1889; near Cressage 5 September 1898; and an adult at Betton Pool on the 12th of the following month. The only instance of its being obtained in summer is one shot near Oswestry in July 1884. A young bird was shot at Pontesbury 26 August 1902.

207. Bar-tailed Godwit. *Limosa lapponica* (Linn.)

Occasionally met with in Shropshire on its migration in autumn and winter. One in the possession of Mr. T. H. Thursfield was shot at Barrow in 1870; a young one was shot by Mr. Sparrow at Church Preen 19 September 1875; two were shot near Cressage in 1878; and one at Buildwas 29 January 1885; whilst in 1881 one was killed by flying against telegraph wires in Shrewsbury.

208. Black-tailed Godwit. *Limosa belgica* (J. F. Gmelin)

A very rare passing migrant. Eyton mentions that several occurred prior to 1837. In the spring of 1877 four were observed on the Weald moors by Rev. W. Houghton and others, whilst Rev. E. H. O. Bridgeman obtained a specimen on the Stiperstones in September 1901; this I examined in the flesh and it proved to be an immature bird.

209. Common Curlew. *Numenius arquata* (Linn.)

Resident on our elevated moorlands such as the Longmynd and Clun Forest, as well as on the low-lying Whixall Moss. It breeds regularly in all these places, but is most numerous on the Longmynd. In the summer it is a shy bird, but towards the end of winter it loses its shyness and descends on to cultivated grounds to feed. I hardly think our local birds migrate to the coasts in winter unless the weather is of exceptional severity.

210. Whimbrel. *Numenius phæopus* (Linn.)

An occasional visitor on migration, more often heard flying overhead than seen or obtained. It occurs chiefly in the spring but has been observed as late as the end of May, although it never breeds in this country.

211. Black Tern. *Hydrochelidon nigra* (Linn.)

This is the first of a group of birds which are all essentially marine. The black tern has wandered our way on about a dozen occasions—of which the most recent are a specimen now at Longford Hall, shot there about 1880, one at Gobowen in July 1883; a young one on the canal at Eyton in July 1884; another seen frequenting the pool at Patshull on the Staffordshire border in August 1885; a beautiful female shot at Walcot Park in the spring of 1892; and an immature bird shot near Broseley, 18 September 1901.

212. Sandwich Tern. *Sterna cantiaca*, J. F. Gmelin.

A fine male was found dead at Mountford Bridge near Shrewsbury in August 1897. It has since been presented to Shrewsbury Museum by Mr. G. J. Dumville Lees.

213. Roseate Tern. *Sterna dougalli*, Montagu.

The only occurrence is one recorded by Eyton, shot at Longden-on-Tern about 1830.

214. Common Tern. *Sterna fluviatilis*, Naumann.

A year rarely passes without a few of these dainty birds paying us a visit, the meres at Ellesmere being specially attractive to this and other sea birds. In the summer of 1898 one stayed for more than a week on the Severn below the English bridge at Shrewsbury. Several have been shot from time to time, but it is hardly necessary to give instances in the case of so common a bird.

215. Arctic Tern. *Sterna macrura*, Naumann.

So closely resembles the common tern that it is not easy to discriminate. Like that it frequently occurs in Shropshire, and Mr. Rocke records that in May 1842, immense numbers appeared on the Severn in an exhausted condition after continuous rough weather.

216. Little Tern. *Sterna minuta*, Linn.

This smaller species is much more rare locally than either of the preceding. One was killed near Ironbridge in 1859 and another near Alberbury, 3 May 1898.

217. Sabine's Gull. *Xema sabinii* (Sabine)

This small fork-tailed gull has been obtained twice in Shropshire—one found dead at Nobold, 4 November 1874, a bird of the year; the other, a male in full plumage, shot

at Sandford near Oswestry 8 September 1893, now in the possession of Mr. Allan Bright, Liverpool.

218. Little Gull. *Larus minutus*, Pallas.

A very rare wanderer. One was shot many years ago near Coalbrookdale, and on 4 November 1874, a party of three appeared on the Severn at Atcham; one of these was obtained and proved to be a bird of the year.

219. Black-headed Gull. *Larus ridibundus*, Linn.

Occurs not unfrequently in autumn and spring, usually singly but sometimes in small parties. These visitors appear to come to us from the Dee valley where they are to be seen at all times of the year. They probably belong to the large breeding colony having headquarters on the Berwyns near Bala. Examples having the dark-brown head characteristic of the breeding plumage are met with occasionally, even in winter. I have seen this gull hawking for moths in the dusk like a nightjar. The individuals met with in autumn are usually immature.

220. Common Gull. *Larus canus*, Linn.

In spite of its name this gull is rare with us especially in the adult state, and it is most unusual to chronicle more than one in any single year. In September 1899, an adult was obtained near Shrewsbury on the 29th, and an immature bird on the 23rd. The following year none were obtained, but in 1901 two adults were recorded—on 1 February at Hookagate, and on 28 September at Middletown.

221. Herring-Gull. *Larus argentatus*, J. F. Gmelin.

By far the most numerous of the gulls, though not at all common in the adult state. Tempestuous weather rarely fails to bring over a few stray birds, but on more than one occasion I have seen and heard of flocks numbering between a dozen and forty flying over in perfectly calm weather, generally in autumn. The meres at Ellesmere seem specially attractive, and a few may be seen there at odd times throughout the year. The autumn flocks usually travel towards the south-east and rarely alight.

222. Lesser Black-backed Gull. *Larus fuscus*, Linn.

It is rather curious that this species occurs frequently between autumn and spring, singly and in flocks, although on the north Welsh coast it is not a particularly numerous gull. The majority of those obtained here are immature birds with brown-mottled plumage, but in April 1900, two adults occurred at different places. One of these had the back of a light grey colour, the other nearly black. A third shot out of a flock near Oswestry on the 28th of the same month appeared to be in its third year and still retained the brown streaks on its head, characteristic of the winter plumage.

223. Great Black-backed Gull. *Larus marinus*, Linn.

Only known to have occurred three or four times in Shropshire, yet on the coast of north Wales this large bird is fairly common and frequently nests by inland tarns. An immature specimen was obtained near Cound in November 1861, whilst the gull has been seen twice in recent years near Kinnerley by Rev. J. B. Meredith. An adult was seen flying over Shrewsbury on 26 March 1902, by Mr. John Franklin, who watched it through a field-glass till it passed out of sight.

224. Glaucous Gull. *Larus glaucus*, Fabricius.

An immature specimen of this white-winged gull was shot in November 1856, while feeding on a dead sheep at the Pradoe near Oswestry; another at Bomere Pool in December, 1863.

225. Kittiwake. *Rissa tridactyla* (Linn.)

Occurs every winter, usually single individuals in tempestuous weather, though I have known it to remain two or three days at a time on the Severn at Shrewsbury. In the spring the young of the previous year are remarkably pretty, having *all* the quills tipped with black, so as to form a black border to the wings.

226. Great Skua. *Megalestris catarrhactes* (Linn.)

A very rare wanderer from the sea. One was caught at Condover in the spring of 1879 and kept alive in confinement for some time; another was obtained the same year on the Severn above Bridgnorth.

227. Pomatorhine Skua. *Stercorarius pomatorhinus* (Temminck)

This handsome species, with its white breast and long tail with twisted centre feathers, has occurred some half a dozen times in the county, generally in rough weather during spring or autumn. One was killed by flying against the spire of St. Alkmund's church, Shrewsbury; another was caught near

Downton Castle 30 March 1866, whilst another was found on the railway at Baschurch, 17 October 1881.

228. Arctic or Richardson's Skua. *Stercorarius crepidatus* (J. F. Gmelin)

This skua occurs in Shropshire in similar circumstances to the last and about as frequently, but after the heavy gale of 14 October 1881, three were found dead and others were seen in the county.

229. Long-tailed or Buffon's Skua. *Stercorarius parasiticus* (Linn.)

A young bird in the collection at Hawkstone was shot near Astley many years ago. Mr. G. D. Lees tells me that Earl Powis' keeper shot one near Baschurch in October 1881, and Mr. Beckwith notes one picked up dead near Garmston, 14 October 1891.

230. Razorbill. *Alca torda*, Linn.

Although so common on the Welsh coast the razorbill is extremely rare inland, and has only been met with once in Shropshire. The specimen was caught at Bromfield in the winter of 1878–9.

231. Guillemot. *Uria troile* (Linn.)

Met with occasionally between autumn and spring. In January and February 1885, several were shot out of a party of about fourteen on the canal at Ellesmere.

232. Black Guillemot. *Uria grylle* (Linn.)

Rocke mentions it as having been obtained years ago, but no recent occurrence is on record.

233. Little Auk. *Mergulus alle* (Linn.)

This curious little sea bird has been found here from time to time in a dead or dying condition after prolonged gales. The most recent instance was in November 1884, when one was taken on Newton Mere, Ellesmere. The winter of 1895–6 was memorable for the number of little auks which invaded Britain, but none appear to have reached Shropshire.

234. Puffin. *Fratercula arctica* (Linn.)

This like the last only occurs here when driven in by gales from the sea. Mr. Rocke records one found on Corndon Hill on the county boundary, a second was found at Tasley, Bridgnorth, in October 1887, and a third at Pontesbury 24 September 1894, whilst early on the morning of 29 July 1902, one was caught alive in a barley-field 2 miles south of Shrewsbury.

235. Great Northern Diver. *Colymbus glacialis*, Linn.

This large and handsome bird appears on the Severn, etc., in winter from time to time. All that have been obtained have proved immature with the exception of an adult female shot on Ellesmere Mere in 1863.

236. Black-throated Diver. *Colymbus arcticus*, Linn.

This smaller species occurs under similar circumstances to the last. The adult specimen in the collection at Hawkstone was obtained in 1862 at Gredington, just outside our county boundary.

237. Red-throated Diver. *Colymbus septentrionalis*, Linn.

Of the three species of diver this occurs the most frequently, though it cannot be accounted other than rare. Most of those obtained have been immature. One was found dead by a postman near Market Drayton in November 1890, and another shot 17 January the same year on Eyton Pool, Baschurch. The late Dr. Rope told me he saw one swimming about on Shrawardine Pool 11 April 1897—a remarkably late date.

238. Great Crested Grebe. *Podicipes cristatus* (Linn.)

Resident and breeds regularly on the meres at Ellesmere, whilst occasionally a pair nest on others of our larger pools such as Betton and Hawkstone. In winter single grebes and small parties frequently appear on various pools and streams where they are never known to breed or to visit in summer. Both sexes assist in incubation.

239. Red-necked Grebe. *Podicipes griseigena* (Boddaert)

Very rare. A specimen in the collection of the late Mr. Thomas Bodenham was shot on the Severn near Wroxeter in winter many years ago ; another near Shrewsbury in March, 1888.

240. Slavonian Grebe. *Podicipes auritus*, (Linn.)

A winter visitor of comparatively frequent occurrence. The most recent instances are one killed by a boy with a stone in the Quarry, Shrewsbury, in December 1890 ; another shot the same year 5 February on the Isle Pool ; one on the Severn near Cressage during hard frost 5 January 1891 ; and another shot at Montford Bridge in November 1894.

241. Dabchick or Little Grebe. *Podicipes fluviatilis*, (Tunstall)

*Locally*, Diver, Jack Douker, Tom Pudding.

This charming little bird, so quiet in its movements yet so quick and clever a diver, is common and resident throughout the county wherever there are quiet and secluded waters such as it loves. In winter its numbers are increased by fresh arrivals from the north or from more elevated districts.

242. Storm-Petrel. *Procellaria pelagica*, Linn.

Rough weather occasionally drives hither a stray bird from the seas. Those recorded have all been during winter with the exception of an adult on 15 July 1886, caught alive at Homer near Much Wenlock and brought to Mr. Beckwith ; the weather had been fine and calm for some time previously.

243. Leach's Fork-tailed Petrel. *Oceanodroma leucorrhoa* (Vieillot)

Recorded about a dozen times in the county, usually after gales. The most recent instances were at Wheat Hill 28 September 1882 ; Attingham 1884, Montford 30 September 1886, and Meole near Shrewsbury 20 September 1899. This last seems to have belonged to a flock which came up the Dee estuary, for several were obtained just then there and in the neighbouring parts of Cheshire, etc. Three were seen near Oswestry 8 December 1901, and one of them, caught by a dog, I subsequently examined.

244. Manx Shearwater. *Puffinus anglorum* (Temminck)

Not infrequent in the autumn, and appears here during wet foggy weather rather than after storms. Mr. Beckwith records a dozen instances. 'In October 1877, one joined the poultry at the Hay farm, Coalport, where it remained several days but was at last killed by a cat. During the early part of September 1882, a small flock of these birds seems to have wandered here. Two were caught near Oswestry and three others near Ludlow, Ditton Priors and Cressage, three of them being adults and two birds of the year. Again in September 1884, an adult bird was picked up near Shrewsbury, and two others were obtained at Aston-on-Clun and Halston near Oswestry. Several of these birds though in good plumage and condition were unable to fly, and even those that had gained fresh water did not seem able to recover their strength' (*Field*, 11 December 1886). Another was found by Mr. R. B. Benson at Lutwyche, 9 September 1887.

## ADDENDA

18*a*. Dartford Warbler. *Sylvia undata* (Boddaert)

It was only during 1903 that the occurrence of this species in Shropshire was ascertained. In the autumn of 1902 Mr. J. G. Lang noticed a pair of small birds in a patch of gorsey ground near Ludlow which he suspected were Dartford warblers. In the following May he found them again in the same place. At this time they became more tame, and on several occasions he was able to approach quite close to them and examine them at leisure through a field glass. The male in particular frequently showed himself perched on the topmost spray of a gorse bush, when his chestnut breast was conspicuous. Subsequently the nest was found by Mr. J. Palmer, who secured the eggs. Mr. Lang found another pair also a short distance off, though he could not discover the nest. There is no doubt that the pair bred there, for later in the year they were seen with two young fully fledged. This is an interesting addition to the local fauna, as the species was not known to occur in this part of England.

50. Waxwing. *Ampelis garrulus*, Linn.

Several recorded at Minsterley in the winter of 1905–6 and at Calverhall near Whitchurch the following year.

110. Rough-legged Buzzard. *Buteo lagopus* (J. F. Gmelin)

A male shot at Onslow 20 February 1904 had been seen haunting the neighbourhood for the preceding three weeks.

111. White-tailed Eagle. *Haliaëtus albicilla* (Linn.)

An immature female was shot at Moston near Hawkstone in January 1906.

115*a*. Gyr Falcon. *Falco gyrfalco*, Linn.

In the *Field* of October 1869 Mr. Percy C. Selous records a female Gyr falcon shot on 25 September by Mr. Edward Childe of Harlescott near Shrewsbury. I have not been able to trace this specimen, but one of

the two Iceland falcons mentioned above as obtained at Leebotwood is in the Hawkstone collection ; it is an adult female.

128. Little Bittern. *Ardetta minuta* (Linn.)

An adult male was shot at Claverley near Bridgnorth in September 1897 ; this record only came to the writer's knowledge recently.

143. Gadwall. *Anas strepera*, Linn.

On 9 December 1906 Mr. Chas. Oldham watched for some time an adult male on the pool at Hawkstone.

147. Garganey. *Querquedula circia* (Linn.)

A pair were observed on Ellesmere mere by Mr. R. H. W. Hodges in April 1906.

152. Scaup-Duck. *Fuligula marila* (Linn.)

An adult male was shot by Mr. Beville Stanier on his pool at Peplow, 15 December 1906.

191. Red-necked Phalarope. *Phalaropus hyperboreus* (Linn.)

On 1 November 1904 an adult in winter plumage, which I subsequently identified, was shot near Condover.

# MAMMALS

The mammalian fauna of Shropshire is as regards number of species a poor one, chiefly because of the inland position of the county. Our mammals are terrestrial and resident. True we have one group—the bats—that travel through the air, but none of them are migratory. Another group—seals and whales—travel by water, but these are marine and Shropshire is too far from the sea to be reached by any of them, unless we are to believe Bishop Cartwright, who states in his *Chronological History of Shrewsbury* that 'in 1672 a small whale came up the river Severn and was taken.' Britain has no mammals peculiar to itself—its fauna is similar to that of the nearer parts of Europe, whilst the mammals of Shropshire are the same as are found in the adjoining inland counties. Few as are our native species the number is gradually being reduced; several are verging on extinction, and others have long ago vanished. Owing to our insular position a terrestrial species once extinct in this country cannot re-appear unless artificially imported.

We may assume that the wild cat used to occur in Shropshire, as it was found in the adjoining parts of North Wales; still there is no tangible proof in the shape of a locally-killed specimen of the pure breed. At Harnage House is a stuffed cat with many of the marks of the true wild species, and it is possibly a half-breed. Early in last century a so-called wild cat was shot near Pulverbatch, but I never saw it nor can the specimen now be traced. Beyond this we have only traditions of encounters with this fiercest of our native wild beasts, some of them told with much circumstantial embellishment.

The stag or red deer must at one time have been numerous, as is evidenced by the number of antlers unearthed in various parts of the county. Some of these are of very large size, and they have been found not only in peat bogs but in the towns when digging foundations, etc. Probably a few of these last were the spoils of the chase, and especially so in the case of the antlers found in the Roman city at Uriconium, to be seen in Shrewsbury Museum. We have no evidence to show when the red deer became locally extinct, but it was known in the Wyre Forest up to the middle of the seventeenth century and probably later.

The fallow deer is not indigenous. There are herds in many Shropshire parks in a semi-domesticated state, whilst in a large tract of wooded hilly country near Ludlow there have for a century or more been numbers of fallow deer in a perfectly wild state. They live secluded from observation and are rarely seen near the roads unless in severe weather, when they descend in search of food.

The literature of the subject is very scanty. Although the birds have been worked so well the mammals of Shropshire have been almost entirely neglected. The only list is T. C. Eyton's written in 1838 (see introduction to the *Birds of Shropshire*, ante). In this list Shropshire is grouped together with North Wales. In the present work the following are new additions : Daubenton's bat, whiskered bat, lesser shrew.

The accounts of other species in Eyton's list were extremely meagre and, in the light of later researches, unsatisfactory. The noctule, for instance, which is one of our commonest bats, is included therein on the strength of a single specimen caught near Shrewsbury Castle.

It may then be said that the present account of the mammals of Shropshire has been prepared *de novo*, and is founded on personal investigations largely aided by the kind and ready help of many friends most of whom are fellow-members of the Caradoc and Severn Valley Field Club.

## CHEIROPTERA

1. Long-eared Bat. *Plecotus auritus*, Linn.
*Locally*, Leatherin' Bat.

The exceedingly large ears serve to distinguish this from our other species of bat. There is little doubt that these are specially sensitive and enable the owner to detect its insect prey in the air even on the darkest of nights. In this connection it is noteworthy that the long-eared bat seldom comes abroad by day, though it flies throughout the night, as is evidenced by its shrill cry which may often be heard when the creature itself is invisible. I have only once known the long-eared bat to be abroad in the daylight, and on that occasion it was obviously at a disadvantage and was easily caught by hand. The species is generally distributed through Shropshire, being found by day harbouring both in trees and buildings. Its winter sleep is a long one, lasting generally into April.

2. Noctule or Great Bat. *Pipistrellus noctula*, Schreber.
Bell—*Scotophilus noctula.*

In its habits the noctule differs markedly from the preceding species, for it regularly comes out about an hour before sunset, pursuing its prey, which consists chiefly of beetles and moths, with great vigour until dusk, when it retires to roost in some hollow tree. It never flies during the dark hours, but comes out again for an hour or more a little before sunrise. Its flight is usually high in the air, and it nearly always captures its prey by diving obliquely upon it from above. I am convinced that it is much more keen-sighted than other bats, and that the reason it flies during daylight is that it depends on sight to find its food. I have experimented by throwing small pebbles into the air across the path of the noctule ; the bats invariably saw the stones and dived till close to them, when—finding they were not good to eat—they turned aside. Noctules roost together in hollow trees in large colonies, often 100 or more. They leave in a long procession and return in the same way. Yet in seeking food they scatter over a large area so that one seldom sees more than a dozen or so on the wing in any one place. They particularly affect districts where there is large timber and open water, and are generally distributed in such places throughout the county. The noctule is easily distinguished on the wing by its size, light colour, and by its rapid flight high up in the air. It is said to retire into winter quarters at the end of August, but I have known it to fly regularly up to 22 October (1901) and heard them scrambling and squealing in their hollow tree at Christmas.

3. Pipistrelle or Common Bat. *Pipistrellus pipistrellus*, Schreber.
Bell—*Scotophilus pipistrellus.*

Although the pipistrelle is reputed the commonest of the bats there is considerable doubt whether this be really the case, as it is generally assumed that all small bats seen are of this species. Still it is certainly fairly numerous in Shropshire, and as it harbours by day in buildings it is more often seen in towns and villages than any other bat. It comes out about dusk and hawks to and fro over a certain beat, flying at a moderate height with many quick irregular turns. It is the

pipistrelle which we sometimes see abroad in the daytime. I have seen one flying along with a number of swallows in brilliant sunshine at mid-day. Like the swallow too it will catch flies by skimming along close to the surface of streams, and I have even known one to be caught by an artificial fly on a fisherman's line. Its winter sleep is less profound than that of other bats, and in mild weather it may be observed as early as January and February.

4. Natterer's or Reddish-grey Bat. *Myotis nattereri.*

Bell—*Vespertilio nattereri.*

It is very probable that this bat is not uncommon in church roofs, etc., but up to now my efforts to obtain it in Shropshire have been unsuccessful. The only record is a specimen taken by Eyton at Eyton near Wellington in 1840 (*Ann. and Mag. Nat. Hist.* iv. 396).

5. Daubenton's Bat. *Myotis daubentoni*, Leisler.

Bell—*Vespertilio daubentonii.*

Not uncommon in shady corners of large pools and on quiet reaches of the Severn, etc. Daubenton's bat never issues from its diurnal hiding-place until the last lingering beams of daylight are departing, when by looking along the surface of the water against the light one can just perceive a small moth-like creature fluttering unsteadily about in a confined area—never rising more than an inch or two from the water, yet never touching it with its wings. So dim and ghostly is it, that the shadow or reflection is more distinct than the bat itself. It never comes abroad in rough weather, and may best be observed on a still moonlight night, as it continues its flight till dawn. Usually two or three keep together in one corner, and as they rarely wander many yards an observer who stands still can watch them at very close quarters. This species hibernates quite half the year; it harbours mostly in outhouses, but not gregariously.

6. Whiskered Bat. *Myotis mystacinus*, Leisler.

Bell—*Vespertilio mystacinus.*

During the last three years I have examined some half-dozen specimens from different parts of Shropshire and have seen others on the wing, so that there is little doubt that the whiskered bat is fairly common. It is the smallest of our native species, and although it harbours by day in buildings is to be found at dusk flying in and out amongst the boughs of trees, especially oaks, and picking off the small moths which there abound. Mr. C. Oldham has lately contributed to the *Zoologist* two important papers on the use of the tail pouch in capturing insects. The bat ducks its head into the pouch in order to obtain a more secure grip of its prey, and that so quickly that the action does not affect the onward flight.

## INSECTIVORA

7. Hedgehog. *Erinaceus europæus*, Linn.

*Locally*, Urchin.

Abundant everywhere. Although of nocturnal habit the hedgehog may occasionally be met with roaming about in dull weather during the daytime. It is entirely carnivorous but does not confine itself to insects, for it will eat eggs and nestlings, and I have on more than one occasion known it to kill poultry at night whilst sleeping on the ground by gnawing into their viscera from behind! Incredible as this may seem I am assured of the fact. In the young the spines are at first soft and hair-like and the skin flesh-coloured, but I have seen several in which the skin was slate-coloured; one such brood of three I sent to the British Museum in 1901. A white hedgehog was seen near Oswestry a few years ago.

8. Mole. *Talpa europæa*, Linn.

*Locally*, Oont (pronounced as in 'good').

Abundant everywhere in spite of the labours of the professional mole-catcher. The buzzard is the only bird of prey which I have found preying upon the mole, as evidenced by remains at the nest. Cream coloured and buff varieties are not uncommon, whilst near Bridgnorth several have occurred of a pearl-grey colour above, golden buff beneath; one of these is in the Shrewsbury Museum.

9. Common Shrew. *Sorex araneus*, Linn.

*Locally*, Hardistrow.

Very common. The peculiar scent due to glands situated near the root of the tail is such that although many animals will kill very few will eat a shrew. Amongst a large number

of castings of owls and hawks examined I have found remains of shrews only in those of the kestrel and barn owl, but both of these evidently feed largely upon them.

10. Lesser or Pigmy Shrew. *Sorex minutus*, Pallas.

Bell—*Sorex pygmæus.*

Possibly overlooked but apparently very rare. The only record in the county is a specimen taken by the Rev. W. L. Harrison in March 1900, at Great Woolaston, now in Shrewsbury Museum. I have not found any remains in the owl pellets which I have examined, though such have been specially searched for.

11. Water Shrew. *Neomys fodiens*, Pallas.

Bell—*Crossopus fodiens.*

A shy little creature seldom seen though not uncommon on our brooks, etc. It seemingly wanders considerable distances from water at times, for I have on more than one occasion had specimens brought that had been found on highroads far from any stream or pool. There is considerable difference in size between the sexes, the male being often an inch longer than the female. An excellent account of the habits of the water shrew as observed in Shropshire was written by a local gentleman, Mr. J. F. M. Dovaston of West Felton, in Loudon's *Magazine of Natural History*, 1829, p. 219. Eyton had an albino taken near Shrewsbury.

## CARNIVORA

12. Fox. *Vulpes vulpes*, Linn.

Bell—*Vulpes vulgaris.*

Common in coverts throughout the county on account of the protection afforded it as essential to the national sport. Were it not for this the fox would long ago have disappeared like its larger relative the wolf. There is a great difference of opinion as to whether the fox and badger will associate in the same earth, but I have undeniable evidence that they will do so. In one instance a vixen with cubs was found in company with a badger and apparently all on good terms.

13. Pine Marten. *Mustela martes*, Linn.

Bell—*Martes abietum.*

This beautiful animal appears to be now quite extinct in Shropshire though it still lingers in certain thickly-wooded parts of Wales. Eyton describes it as getting rare even so long ago as 1838. He mentions two killed about that date at Stapleton. There are several faded specimens in Ludlow Museum killed in the neighbourhood at the same period. About 1840 a pair was killed on Wenlock Edge, one of which was presented to Shrewsbury Museum but has since perished, whilst a specimen from the same district is preserved at Harnage House. The latest record is one killed at Bucknell in 1862 by Mr. Sitwell. It is a great pity that such a beautiful and comparatively harmless creature should have been so ruthlessly exterminated.

14. Polecat. *Putorius putorius*, Linn.

Bell—*Mustela putorius.*

*Locally*, Fitchet, Foumart, Fern, Gill.

A century ago the polecat was quite common in Shropshire, but its undeniably bad character led to its being destroyed at every opportunity, so that it is now practically extinct in the county. Possibly there are still a few in the remote wooded districts on the Welsh border, whilst one was killed in the Wyre Forest so recently as in April, 1901. Others have been obtained within the last ten years at Onslow, Leighton and Craven Arms.

15. Stoat. *Putorius ermineus*, Linn.

Bell—*Mustela erminea.*

In spite of the large numbers killed by keepers every year the stoat is still very common with us. One reason for this is that the animal is very prolific, breeding more than once in the year and having often from five to seven in the litter. There are two local instances authenticated in which there were as many as ten in one litter. Stoats in more or less perfectly white coats (=ermine) are frequently met with in winter, and this quite independently of the severity of the season, for they were particularly common in the mild winter of 1901–2 when there was very little snow. The majority of these were males. In this genus the males are larger than the females.

16. Weasel. *Putorius nivalis*, Linn.

Bell—*Mustela vulgaris.*

Although the weasel is quite common in Shropshire it is apparently less so than the stoat. On Earl Brownlow's estates the weasel is protected, and it would be well if other landowners also protected it, since it feeds principally on rats and mice, rarely touching larger animals or ground game. The females are smaller than the males, but

it is also a curious fact that there are two races of females—a large and small race—the latter being hardly more than half the size of the former. Indeed amongst gamekeepers there is a prevalent belief that there are two distinct species of weasel—an idea which I cannot endorse. Occasionally weasels are caught in mole traps, though whether whilst pursuing moles or field mice is a moot point.

17. Badger. *Meles meles*, Linn.
Bell—*Meles taxus.*
*Locally*, Brock (obs.)

There is a deeply rooted belief that the badger is a rare animal in this country, though it has no foundation in fact, for the creature is found in almost every remote belt of woodland, whilst its apparent scarcity is the outcome of its shy nocturnal habits. Its earth is generally in a bank within a wood and consists of a single chamber entered from several passages which converge to its narrow entrance; a plan which renders defence with tooth and nail easy. A large mound in Hawkstone Park contains a compound earth inhabited by at least five badgers; it is known to have been thus occupied for a great many years. Amongst British mammals the badger and roedeer exhibit the phenomenon of 'suspended gestation.' The young are said to be born usually in March, but local instances are recorded as early as the beginning of February.

18. Otter. *Lutra lutra*, Linn.
Bell—*Lutra vulgaris.*

Common on all our streams both large and small, especially on the Welsh border. Otters have also occasionally been met with crossing the country and at some distance from any river. Sometimes, but not often, one will take up its quarters on the banks of one of our meres. The favourite food is the eel, and if plentiful this is preferred to salmon or other large fish, so that the otter is not altogether an enemy to the fisherman, whilst to the naturalist its presence and graceful movements add greatly to the charm of a riverside ramble. Floods on the Severn not infrequently drive otters from their holts which are submerged. Some years ago one came at such a time right into Shrewsbury, and for several weeks was to be seen fishing beneath the English Bridge. Another, in December 1901, took refuge in a pigsty at Ironbridge, where it was discovered and killed by a terrier!

## RODENTIA

19. Squirrel. *Sciurus leucourus*, Kerr.
Bell—*Sciurus vulgaris.*

This agile and beautiful little creature is very plentiful in all our woodlands, and being, unlike most of our mammals, diurnal, it is familiar by sight to every dweller in the country. The specific name *leucourus* is not very apt. True we often see squirrels with white or cream-coloured tails, but this is merely a passing phase, for it has been found by keeping them in captivity that at the next moult the tails reverted to the normal red colour. The length of the tufts of hair on the ears varies at different seasons, as also does the colour of the body; in winter the tips of the hairs are grey so that the whole animal looks greyish. The nest or drey is an interesting structure; there is a beautiful example in Shrewsbury Museum with a wren's nest in its base.

20. Brown Rat. *Mus decumanus*, Pallas.

Abundant not only in houses, where it does a certain service by disposing of sewage, but in the country too, where rats sometimes swarm to such an extent as to become a positive nuisance; they will take up their quarters in a rabbit warren, living in the burrows and killing and eating the young rabbits in the nest; others live on the banks of brooks and ponds, swimming and diving as readily as a water vole, eating anything they can find whether animal or vegetable. The sins of these nomads are often charged against the harmless water-vole. In one wood near my house there are swarms of rats who well know the keeper's daily round for putting down corn for the pheasants; they scarcely wait for him to leave before falling to on this fine fare.

21. Black Rat. *Mus rattus*, Linn.

Much difficulty has been experienced in obtaining proof of the occurrence of this species in Shropshire. Black rats are reported now and then—several were caught at Blymhill near Shifnal in 1900, one of which is now in Shrewsbury Museum—but these are only melanistic or very dark varieties of the preceding species. Eyton wrote in 1838 that he could not obtain any indubitable evidence, although there was little doubt that at one time the black rat was common here as in other parts of England. Mr. T. R. Horton informs me however that his father lived for many years at Belswardine Hall near Cressage,

and he well remembers black rats in the farm buildings and house; this would be up to about 1845.

22. House Mouse. *Mus musculus*, Linn.

Too well known to call for observation, except to mention that it is not confined to the dwellings of man but occurs in hundreds beneath and inside ricks and haystacks, and even in the open country. I have met with house mice on highroads and in woods, and have found remains in owl pellets.

23. Long-tailed Field Mouse or Wood Mouse. *Mus sylvaticus*, Linn.

Abundant in fields and gardens; sometimes does a good deal of mischief by digging out and eating seeds and bulbs in the latter and in greenhouses. It is distinguished from the house mouse by its larger eyes and ears, long tail and white feet. It does not hibernate, but during hard weather resorts more to farmyards and houses than at other times. It can climb well and has an interesting habit of ascending the long branches of the hawthorn and wild rose, biting off the berries and conveying them to the nearest old nest of thrush or blackbird. It then opens the skin, tears out the stones and gnaws a hole at one end to get at the kernel—the only part that it eats. I have found more than ½ pint of gnawed stones in one nest, and when at the fall of the year the berries are fresh the crimson mass presents a striking spectacle. The large variety called *Mus flavicollis* has been met with at Oswestry.

24. Dormouse. *Muscardinus avellanarius*, Linn.

Around Shrewsbury and in most wooded parts of the county where there is much underwood the pretty little dormouse is common. I have studied them much both in confinement and at large, and found their habits most interesting. They particularly affect hazel bushes and hedgerows where there is plenty of honeysuckle; the nests are almost entirely constructed of honeysuckle bark, coarse strips on the outside, finer inside, with an admixture of moss and leaves. The materials are not woven together, but each strip of bark is taken by the middle between the teeth of the animal and dragged into the middle of the mass. The dormouse then turns over and over inside the nest, still holding the piece, and thus rounds out the nest and lays each piece smoothly within it. The nest therefore is added to always from the centre. The hole for entrance is on one side, but is elastic and almost closes up when not in use. Dormice associate in pairs, but the male usually builds a nest for himself close to the one in which his mate brings forth her young. Although most authors say that the dormouse litters in early summer my own experience shows that the young are brought forth usually in autumn, from mid-August to mid-October. They are at first quite naked and blind but grow rapidly, so that when six weeks old they are nearly as big as the parents, but brown instead of chestnut-coloured. On the approach of winter each mouse constructs a nest in which to hibernate. These are similar to the breeding nests, but those made by young dormice are often smaller than their parents'. I have never found two hibernating in one nest. Usually there are several nests near together in a hedgerow, often close to the ground and rarely more than 5 or 6 feet above it. Dormice sleep in their nests all day and only come abroad at night. In confinement they prefer acorns to any other food and drink a good deal of water. In the natural state they hibernate all through the winter and rarely emerge before the end of March. This winter sleep is very profound. The temperature falls so low that the animal feels cold to the touch. All the vital functions are almost in a state of suspension; respiration and the beating of the heart can scarcely be perceived. Even in captivity and in a warm room the mouse remains thus for weeks at a time, and it seems probable that in nature even a few days of warm weather in winter would not rouse it from this torpor. It is true that the dormouse stores up food in holes, but this is probably for use in spring rather than winter, and it is very doubtful whether any of it is consumed before then.

25. Harvest Mouse. *Mus minutus*, Pallas.

This tiny little animal appears to be extremely local. Mr. G. W. Murdoch records in the *Zoologist* (1895, p. 447), finding the species in some numbers at Church Stretton in 1872. Other occurrences have been reported from time to time, but I have been unable to obtain a local specimen of either mouse or nest for Shrewsbury Museum, and these records must be regarded as doubtful, as the field vole is frequently called the harvest mouse because it is met with when the grass is cut for hay. In confinement the harvest mouse is an interesting pet, full of energy, adept at climbing and never vicious. It constructs a network of tunnels in the hay with which its cage is lined, and runs through them with playful activity. It is particularly active as night approaches. It eats insects as well as grain.

26. Water Vole or Water Rat. *Microtus amphibius*, Linn.

Very common on pools and streams and shows great variation in colour, some being grey, others brown, reddish-brown, dark brown and black. The last named variety occurs on the meres at Ellesmere. I have often watched one feeding but never saw it eat anything but vegetable matter. The favourite food is the succulent stems of *Potamogeton* or the thick basal portions of the leaves of yellow iris.

27. Field Vole or Short-tailed Field Mouse. *Microtus agrestis*, Linn.

*Locally*, Harvest Mouse.

Very common in fields and gardens, and even in town gardens. Although it has never multiplied here to such an extent as to become a 'vole plague,' it yet does a great deal of mischief by gnawing the roots of growing plants, and it is particularly fond of crocus-bulbs. The nests with naked young are often cut up by the reaping machines in hay-harvest, a circumstance which has caused it to be known very generally by the name 'harvest mouse.'

28. Bank Vole or Red Field Vole. *Evotomys glareolus*, Schreber.

Bell—*Arvicola glareolus.*

Closely resembles the field vole, but is of a reddish colour on the back and has a relatively longer tail. The molar teeth differ in the two species, those of the field vole having the outer angles pointed whilst in the bank vole these are rounded. Examination of owl-pellets shows that both species are eaten by all our native owls and that both are widely distributed in Shropshire, though roughly speaking the bank vole predominates in the south, the field vole in the north. The colour of the under parts varies from grey to yellow, whilst in others the belly is almost white.

29. Common Hare. *Lepus europæus*, Pallas.

Bell—*Lepus timidus.*

Still common, though decreasing since the protection of the law has been withdrawn. Fleming in his *British Animals* records a black hare obtained at Netley many years ago, whilst another was coursed and killed at Enville in November 1853. In September 1901 I was shown one which had been taken near Newport, Salop; it was entirely white except a patch of the normal colour over the haunches. Opinions differ as to the number of young produced in a litter. Sportsmen and farmers whom I have questioned all agree in saying that they never met with more than two, or very rarely three; yet I know of an instance in which five fœtuses were found in a doe. Mr. W. D. Dovaston also tells me that his late father used to keep hares in a wired-in grass enclosure and made some interesting observations on these half domesticated animals. He found that a few hours after birth the mother carried off her young and deposited each in a separate place in the paddock, afterwards visiting each in turn to suckle it. If this is the usual habit of the hare one can understand how it is that the number of young found with the mother is so much smaller than the number in the litter.

30. Rabbit. *Lepus cuniculus*, Linn.

Abundant. Black, white, pied and coloured varieties occur. Although the rabbit usually associates in warrens and lives in a burrow there are large numbers that never do so. These are known to sportsmen here as 'bush rabbits' and they lie in a 'form' on the ground just like a hare, though generally beneath some kind of cover such as bracken or brambles. There are certain districts in Shropshire where the ground is hilly and consists of rock or sharp stones. Here the rabbits cannot burrow and live entirely above ground. There is little doubt that the nature of the ground has produced the change of habit. The rabbit has many enemies but none more dreaded than the stoat; when pursued by one of them it soon ceases trying to escape and lies down to await the fatal bite. Yet one sentiment—mother-love—will overcome even the rabbit's dread of the stoat. An instance occurred near Shrewsbury in June 1902, when the cries of a young rabbit which was pursued by a stoat brought the mother to the rescue. She charged the stoat, knocking him right over; then, sitting up on her haunches, she struck at him furiously with her forepaws till he had to retire bleeding and discomfited.

## ADDENDA

Lesser Horse-shoe Bat. *Rhinolophus hipposiderus*, Bechstein.

An example of this bat was taken at Dowles on the borders of Shropshire and Worcestershire on 6 July, 1904, by Mr. J. Steele Elliott; it is now in the museum at Worcester.

10. Lesser Shrew. *Sorex minutus*, Pallas.

Two additional examples have occurred—one found dead in the Longmynd by Mr. T. A. Coward in the autumn of 1905; the other caught by a cat on the outskirts of Shrewsbury in January, 1906.

28. Bank Vole. *Evotomys glareolus*, Schreber.

Two specimens were taken at Ellesmere in 1905 entirely of a sooty black colour. They appear to be the first recorded instances of melanism in this species; one of them has been placed in the museum at Shrewsbury, the other at Ellesmere.

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# Prehistoric Map of Shropshire

## Reference

- Neolithic Implements Miscellaneous objects such as Personal Ornaments, coins etc
- Bronze Implements and Weapons and Bronze Age Pottery also Late Celtic Antiquities

# EARLY MAN

IT is difficult within the compass of a short chapter to give a clear idea of the story of a period whose limits we are unable to define with exactness, but which covered many centuries. The task, however, is rendered more easy in the case of Shropshire than in the case of more southern counties, by the fact that the story does not begin so early.

The first inhabitants of Britain were the men of whom the traces are to be found in the river-drifts of the Thames Valley and elsewhere in the south, and these were followed by the cave-dwellers. Both are classed under the term palaeolithic, and date back to a time when England was joined to the Continent, and the conditions of climate were very different from what they are now. It has been a generally accepted dictum that no palaeolithic remains are to be found north of a line drawn through Derbyshire, and though in recent years some doubt has been thrown on this by discoveries in the drift of the valley of the Trent, no traces have up to the present been found in Shropshire.

We may, therefore, at any rate until further discoveries, dismiss the idea that the palaeolithic hunter roamed its forests in pursuit of mammoth or elk; in that era it was probably either submerged, or had a climate too rigorous for human habitation.

In time, however, palaeolithic man passed from the scene, and after an interval which we cannot count in years, another race appeared in Britain to which we give the name of neolithic. What was their connexion with the palaeoliths we cannot tell, or whether they were connected at all; they had some points in common with them, but rude as neolithic civilization still was, it showed an advance on that of the previous race.

It is with the coming of these neolithic people that the story of Shropshire begins, and it will be best understood by a reference to geography. By this time the British Isles had practically taken their present form and were separated from the Continent by the channel which still divides them; the climate, too, had become comparatively temperate, and the conditions of life were not very diverse from what they are now. The internal aspect of the country as regards its physical features was but little different; mountains stood where they stand at present, and rivers flowed in the same courses. It must be remembered whenever we attempt to deal with the history of Shropshire—in prehistoric times no less than in those which come later—that its geographical character is largely the key to its story.

It must be borne in mind then that what is now the county of Salop consists of two portions, divided by the River Severn, of which the northern half is for the most part flat, and the southern almost entirely made up of hills. The Severn forms a natural highway connecting the county with the south, while in the west, in what is now Wales, its hills pass into rugged

mountain-fastnesses. On the one hand, remote from the Continent, it was slow to feel European influence, but on the other hand it could not ultimately escape that influence because the only escape from it was into the mountains or the sea. So it is that Shropshire has been the battleground of advancing civilizations from the most ancient down to the most modern times.

In the prehistoric period, by which we mean roughly the period ranging from the earliest times to the coming of the Romans, we have to deal with the invasion and settlement of three different peoples. The first of these, known as Iberians, are possibly represented in modern times by the inhabitants of the Basque provinces on each side of the Pyrenees. Their hold on England was extensive. Their characteristic features are to be traced not only in Wales—especially the south—and the border counties, but in Yorkshire and several other parts of England. They were not, however, allowed to maintain possession undisturbed, but were driven westward by an invasion of Celts, an Aryan race whose original home seems to have been Central Asia. These were known as Goidels, and they were in turn themselves driven westward by another Celtic people known as Brythons. Each of these invasions marked an advancing wave of civilization, which was distinguished by some special characteristics, though much was common to all. It is the aim of this chapter to fill up the outline thus presented by the light of actual discoveries in the county.

On the principle then which is laid down in the first number of the *Spectator* that every reader wishes to begin with knowing the personal appearance and condition of the characters introduced, there comes the question, What were the physical characteristics of our prehistoric ancestors? Whom did they resemble of the human types with which we are now familiar? This question is answered by the human remains disinterred from sepulchral mounds of the period, and the correctness is no longer doubted. The non-Aryan Iberian race were short of stature—the men not exceeding 5 ft. 6 in.—and thick-set in figure, their special characteristic being the length of their skull, such as may be seen in a specimen found near Wroxeter and preserved in the Shrewsbury Museum. The outline of the face was oval and the jaws did not project, but the forehead was comparatively low and the nose was aquiline.[1] The type, as already mentioned, is still to be found in several parts of the country, especially in South Wales. It is not uncommon in Shropshire, and the modern representatives enable us to complete the picture of their neolithic ancestors. They had black hair and black eyes, and except for the shortness of their stature were a handsome race, possessed of considerable mental capacity.

The Celts who followed were of widely different appearance from the Iberians. In contrast with the dolichocephalic or long skulls of the earlier race, their own were brachycephalic or round; their faces were angular, their jaws were prominent, and their cheekbones stood out under a high broad forehead. Their height averaged 5 ft. 8 in., and we know from their modern representatives, who are to be seen everywhere in Wales and the borderland, that they had fair complexions with red hair and blue eyes.

We turn now from the people themselves to their surroundings and pursuits.

[1] Boyd Dawkins, *Early Man in Britain*, 311–16.

First as to their home. To a certain extent all through the prehistoric period, and especially in the earlier neolithic portion, the inhabitants both of Britain and the Continent lived either in pit-dwellings or lake-huts, exchanging them as time went on for stone huts above ground. In order to understand these customs we must bear in mind that in prehistoric times Shropshire was a vast forest, except on the tops and higher slopes of the hills, and what there was of valley not covered by trees was largely given over to water in the form of river, or lake, or marsh. The range of spots on which human habitation was possible was limited, and was still further affected by the humidity of the climate. We have no statistics of prehistoric fever or ague, but even neolithic men must have found out that life was longer under some conditions than others. It is therefore in accordance with expectation that we find a neolithic settlement of pit dwellings on the summit of the highest hill in Shropshire. Abdon Burf on the top of the Brown Clee consists of an inclosure surrounded by a stone rampart, and within it are numerous depressions whose appearance points clearly to their being pit dwellings ; but they have never been scientifically investigated, and until careful excavations have been made it may be wise to a certain extent to suspend judgement. At present the only direct evidence seems to be the discovery a few years ago at the foot of the hill of a polished hatchet of local stone, which is now in the possession of Lord Boyne.

Another neolithic settlement, similarly situated on the summit of Rock Hill, near Clun, was investigated by the late Mr. George Luff, who found a considerable number of stone implements, which are now in the Shrewsbury Museum, and were described by him in a paper contributed to the Shropshire Archaeological Society's *Transactions* in 1888. His investigations led him to the conclusion that the hills of that part of Shropshire were the home of a very considerable population in neolithic times. Among the relics discovered by him were numerous flints, though Shropshire is far away from any spot on which flints are naturally found, and their various forms seem conclusively to show that they formed articles of an extensive commerce both in a condition chipped ready for use, and as rough stones to be manufactured on the spot.

The same sort of evidence, though on what may be called a smaller scale, points to the existence of a similar settlement on a piece of high ground in the author's parish of Condover. It is the only spot in the neighbourhood with a Celtic name, ' Pentre,' and it is the only spot, as far as is known, near to which flints have been found. Within sight of it were dug up two early cinerary urns which will be alluded to later on.

Shropshire, however, in neolithic times had within its borders a considerable area covered by water. The neighbourhood of Ellesmere is still a lake country, and meres must have been much more extensive in early days. Mr. Luff was of opinion that there was in prehistoric times a large lake at the foot of the hill on which he found the implements referred to ; and in the parish of Condover, Bomere Pool is the largest survivor of a series which can easily be traced all through the neighbourhood. It is highly probable that hut dwellings existed on the borders of some of the Ellesmere meres, and a few years ago it was thought that traces of such a settlement had been discovered. Investigations, however, left the case ' not proven.' That the country was occupied by a considerable population is shown by the fact that

no less than three canoes made of tree trunks have been discovered at different times in the peat, one of which is to be seen in Ellesmere Town Hall.

Sometimes the home of the prehistoric inhabitant found its protection in a somewhat different form. In the neighbourhood of Baschurch is a spot called the Berth which approaches in some respects what is known in Scotland and Ireland as a Crannog. It consists of two elevated portions of ground which originally stood out from a morass which entirely surrounded them. These islands, as they were then, formed the settlement, and no doubt were crowned with huts. The morass is now dried up and the huts have vanished, but there remains an equally interesting trace of their occupation. The two mounds are still connected by an artificially-formed causeway, some 150 yards in length, and four yards wide, while another causeway gave access to what we may call the mainland. A somewhat similar prehistoric settlement in the parish of Condover is much less generally known. Bomere Pool, already mentioned, has between the pool itself and the marsh known as Shomere, a ridge, along which runs the cart-track from Bomere Farm to the Keeper's Cottage. At each end of this ridge, not far from the houses just mentioned, it has been artificially cut through, so that the water of the present deep lake and that of the more shallow one which occupied the marsh would be connected, or be crossed only by a narrow causeway. The island thus formed would be an ideal place of safety in early times, and though at present, as far as is known, nothing in the way of prehistoric remains has been found at Bomere, it may not be unreasonable to claim it as a relic of neolithic times.

On the top of Corndon, on the Montgomeryshire border, are heaps of stones which appear to be remains of huts that were above ground as distinguished from pit dwellings.

In this connexion it may be well to mention the camps of refuge which those who lived on or near the hills seem invariably to have had. These do not appear to have been primarily constructed for permanent habitation, but were places to which the inhabitants could betake themselves with their cattle and other belongings in times of danger. It is impossible to name all that exist in Shropshire, or to decide to what exact period each one belongs. It is hardly too much to say that every hill has its earthwork or 'camp' of some kind, and many of these go back to neolithic times, though they were probably utilized afterwards by other races down to historic days. Indeed it is almost certain that parts of the dyke which we attribute to the Saxon King Offa date back to a far earlier period, and that his work was in many places, not to construct, but only to make connecting links between, defences ready to his hand.[2]

We turn now to the tools and implements used by our prehistoric ancestors. This necessarily forms a most important section of the subject, inasmuch as it is by them more than anything else that we form our estimate of their habits and the extent of their civilization. Thus far, though allusion has been made to the different races whose sway filled up the Prehistoric Period in Shropshire, their habits have been spoken of as more or less the same. This was true to a large extent:—Neoliths and Celts, Iberians, Goidels and Brythons, had many characteristics in common: habits of life, which originally belonged to the earliest race, belonged also to those which

[2] *Arch.* liii, 465.

*H. H. Hughes, photo.*

STONE IMPLEMENTS IN THE MUSEUM, SHREWSBURY

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followed, and as there was gradually a large fusion of races by intermarriage, even points in which they differed became less marked. There are very few peculiarities on which we can say for certain that this was confined to the Neoliths and that to the Celts. When we come, however, to the consideration of their implements, we come to a more marked difference. The Iberians had only those made of stone, while the Goidels brought with them implements of bronze, and the Brythons were acquainted with the use of iron. It is not meant that these respective materials were used exclusively by each people mentioned,—the use both of stone and bronze continued side by side with that of iron down to the close of the Prehistoric Period, but it is convenient to divide it into a Stone Age, a Bronze Age, and an Iron Age.

Before proceeding to speak in detail of the traces of these three ages in Shropshire the reader must be reminded again of the physical characteristics of the county, namely that the north is flat and the south is hilly ; in other words, the north would always be easily accessible to an invader and easily conquered, while the south would afford fastnesses for those in possession, from which they would be dislodged with difficulty. The result was that in the Celtic invasion, while the old race held its own among the hills of the south, the invading race with its more advanced civilization took possession speedily of the northern plain, and settled down there. This course of events, which is according to our expectations, has an interesting confirmation in the implements which have been discovered. The bronze implements have mainly been found north of the Severn, while those of stone have been found south of it—the bronze in the plain, the stone among the hills.

Among the relics of prehistoric life which have been found, the first place may be given to the implements, mostly of flint, found by Mr. Luff in the neighbourhood of Clun, and now deposited in the Shrewsbury Museum. They include : arrow heads, scrapers—probably used in skinning animals,—and stone rings, which may have been spindle whorls used in weaving or weights for fishing lines. Mr. Luff hazarded the conjecture that they were an early form of money. Alongside of these in the Museum are a number of axes and hammers, some of which were found in Shropshire. These are mostly of polished stone other than flint, but the hammers belong to a somewhat later age, being large in size and perforated to receive a handle instead of being themselves inserted in a handle, which was the primitive form.

Clun, however, is not the only part of the county which has yielded a comparatively rich harvest of stone implements. Mr. T. R. Horton of Much Wenlock has collected a considerable number from Harley and the neighbourhood, which are now deposited in the Shrewsbury Museum. It seems clear that the high ground of which Kenley may be taken as the centre was the seat of an important neolithic settlement, of which the 'camp' on Acton Burnell Hill may be a further remnant. The traces of Roman roads and settlements in the neighbourhood go to confirm this. In their conquest of the original occupants of the region the Romans discovered its beauty, and opened it up for their own occupation. The contents of Mr. Horton's collection are for the most part parallel to those gathered by Mr. Luff, and clearly belong to the same stage of civilization.

We pass to the age of Bronze. This metal it will be remembered is a mixture of copper and tin. There are a few instances in which implements have been found of pure copper, but those who discovered the use of copper very soon found that it was much more durable and useful if it was alloyed with tin, and so bronze implements became comparatively as numerous in the second Prehistoric Period as stone had previously been, though it must be borne in mind that stone continued still to be used. Bronze cutting implements show a considerable variety of shape and skill in manufacture. At first they were clearly modelled on the shape of the stone implements, a flat piece of metal with a cutting edge,—but by degrees a stop-ridge was elaborated to give firmness to the handle, and then gradually wings were added which developed into a socket. The specimens in the Shrewsbury Museum embrace examples of all these stages, and so tend to show that the Bronze Age in Shropshire extended over a considerable period. Several specimens from the county are enumerated in Sir John Evans's *Bronze Implements*, but there are also several to be seen in Mr. Beville Stanier's Museum at Peplow. These last were apparently all found in the neighbourhood of the Red Castle at Hawkstone, and the collection includes also an example of bronze spearheads, of which there are two others in the Shrewsbury Museum. Spears and daggers as well as arrows formed the offensive weapon of the Bronze Period, the defensive weapon being a small round buckler, of which an example was found some years ago near Ellesmere.

It will be sufficient to make only a passing allusion to the connecting link which we yet have in Shropshire with prehistoric times, viz. the coracles still in use on the Severn. They are the direct descendants of the boats in which our remote ancestors fished in the same river. Fishing was one source of their food supply, another being of course hunting, but even the earliest Neoliths did not depend wholly on the chase, as their predecessors the Palaeoliths had done. They cultivated the ground and used its products both for food and clothing. They were acquainted with various kinds of grain, and wore garments made from flax as well as those made from the wool or the skins of beasts.

No doubt in all these things there was advance throughout the whole Prehistoric Period, and with regard to many it is not possible to say when they were introduced, but the second Celtic invasion—that of the Brythons was apparently marked like that of their predecessors the Goidels, by one very distinct change. This was the introduction of iron, which, more perhaps than anything else, has, in every age since, swayed the destinies of the world. Iron did not at once supersede either stone or bronze, but soon proved itself so useful, and so capable of serving many purposes that stone and bronze gradually fell into disuse, and there was developed an Iron Age that in a sense has lasted till our own time, and so by degrees prehistoric man passed into historic, the man of whose doings we conjecture into the man of whose doings we know.

It remains, however, that a few words should be said about our prehistoric ancestors in death as well as life. It is from sepulchral mounds that the clearest intimations are derived of what were their customs while living. The dolichocephalic Iberian race buried their dead in long or oval-

*H. H. Hughes, photo.*

Bronze Implements in the Museum, Shrewsbury

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shaped barrows, the body being placed in a sitting posture under stones which are often now to be seen above ground and are known as cromlechs. The position of the body was probably one derived from the posture in which they were accustomed to sleep in their huts. Long barrows which have been carefully explored have usually contained stone implements of various kinds, both beside the body and in the substance of the mound itself. The latter fact has led to the suggestion that at the time of the interment flints were scattered on the grave in honour of the dead, as we scatter flowers, and that our own custom is in fact a survival of it.

The Celtic race appear to have introduced some changes in their mode of burial. They still heaped barrows over their dead but they were smaller and round in shape, and they introduced or adopted at an early period the custom of cremation ; and from this time onward burning seems to have existed at the same time as inhumation. The period of these interments is marked as before by the implements or ornaments found. The barrows of Shropshire apparently without exception are round, and belong to the Celtic race, but very few have been properly examined. In the case of those on the 'Old Field,' now used as the Ludlow racecourse, the interments had followed cremation, and the fragments of metal were of bronze.

The practice of cremation brought into prominence another criterion of prehistoric civilization. A certain amount of coarse pottery has been found in the long barrows of the early Neoliths, but when cremation became an established custom, urns for containing the ashes became a necessity ; and such cinerary urns have been found in considerable numbers. Those of early date are easily distinguished from those of the Roman Period by the poor quality of the pottery and the rudeness of the ornamentation. Allusion has already been made to the fragments of two cinerary urns found in the parish of Condover. They were discovered about 2 ft. below the surface of a field at Ryton, and about a yard from each other. The first stood upright, the second was inverted. They belong to the Late Bronze Age or the Early Iron Age. Very similar urns were found on the 'Old Field' at Ludlow.

It was probably in connexion with burials that stone circles were originally formed, the upright stones at first marking the boundaries of a barrow. The only district of Shropshire in which stone circles still remain is on the Montgomeryshire border, near to Corndon Hill. Of these the most perfect is that known as Mitchell's Fold, of which some of the upright stones stand about 6 ft. out of the ground, but the remains of two others are to be found in the neighbourhood. It is curious that they should be confined so entirely to this corner of the county and difficult to account for. It may arise from the fact that these circles became associated with worship, even if they had not such a purpose from the first. Much obscurity naturally surrounds the subject, and possibly there was considerable difference between the religious cults of the non-Aryan Iberians and the Aryan Celts, but there can be little doubt that the sun entered largely into their worship. Anyone who has stood within the circle of Mitchell's Fold and looked on the panorama of hills around can well believe with what emotion those who erected it would greet the first beams of the great orb of day as it rose above the eastern heights, and excuse them if they adored it as their God.

## Topographical List of Prehistoric Implements

Acton Scott.—Stone hammer, net sinker and scraper, now in Shrewsbury Museum.

Aston, near Oswestry.—Stone hammer, found in a gravel pit. Lent by Colonel Lloyd to Shropshire Exhibition of Antiquities in 1898.

Bagley, near Hordley.—A buckler of bronze found in digging a drain in 1864. A canoe between 18 ft. and 20 ft. long was found about 1872, but allowed to fall to pieces. A bronze sword, found at Val Hill, and a bronze celt found on the glebe land at Bagley were in possession of the late rector of Hordley, Rev. J. W. Moore.

Battlefield.—Three bronze celts and five other bronze articles of uncertain use, now in Shrewsbury Museum.

Bitterley.—Basalt hammer, now in Ludlow Museum.

Broadward.—A large hoard of various bronze articles, now in British Museum. [Evans, *Bronze Imp.* 168, 285, et seq.]

Brogyntyn.—Bronze gouge and chisel. [Evans, *Bronze Imp.* 174.]

Bromfield.—Stone hammer in Ludlow Museum. Bronze spearhead in Ludlow Museum.

Brompton, near Chirbury.—A stone celt in possession of Mr. G. Mountford of Churchstoke.

Bucknell.—Bronze spear head, now in British Museum. [Evans. *Bronze Imp.* 74.]

Buildwas.—Bronze sword blade, found in the Severn. [Evans, *Bronze Imp.* 282.] A stone hammer found near Buildwas is at Woodhill, near Oswestry. Another is in the possession of Mr. D. G. Goodwin of Uffington, together with a flint borer and a worked flint of uncertain use, also found near Buildwas.

Burcote, near Worfield.—In 1809 a cave containing bones of men and animals was found by men working for Mr. J. B. Hardwick. Two flints were found among the other remains. [*Shrops. Arch. Soc. Trans.* (Ser. 2) iv, 274.]

Burwarton.—Stone hammer now in possession of Lord Boyne.

Child's Ercall.—Bronze spearhead, now in Shrewsbury Museum. Bronze palstave found in 1866, also in the Museum.

Church Preen.—A stone implement found here was in possession of the late Rev. T. E. Minshull, and a polished celt in that of the late Mr. Sparrow of Preen Manor.

Church Stretton.—Stone hammer and scraper, now in Shrewsbury Museum. Fine basalt axe hammer found at Longnor Park in 1906, now in possession of Mr. Hall, Church Stretton. Bronze scabbard-end in Shrewsbury Museum, found at the foot of Caradoc.

Clee Hills.—Stone hammer now in possession of Mr. J. H. Cooke, F.G.S., His Majesty's Inspector of Schools.

Clun.—The late Mr. G. Luff found many relics of the Neolithic population of this neighbourhood, which are now in Shrewsbury Museum. Two spindle whorls found on Little Hall Farm have recently (1907) been added to this collection by Mr. E. Hulme, the present occupier.

Clungunford.—Fragments of pottery. [Hartshorne, *Salopia Antiqua*, 102.]

Cound.—Stonecelt in Shrewsbury Museum. Other stone implements from this neighbourhood are in the collection formed by Mr. T. R. Horton of Much Wenlock, now in Shrewsbury Museum.

Ditherington, near Shrewsbury.—Stone celt and hammer stones found near the Shropshire Maltings. Exhibited in 1898.

Eastwall, near Rushbury.—Stone celt now in the Shrewsbury Museum.

Ebnall, near Whittington.—Two bronze punches, and spearheads, &c. [Evans, *Bronze Imp.* 174.]

Ercall Hill.—Bronze palstave found in 1891, now in Shrewsbury Museum.

Farlow.—A stone hammer (basalt) found in a wall of the Glebe Farm, now in possession of Mr. T. Butcher of Cleobury Mortimer.

Frodesley.—A stone hammer found near the Rectory, now in Shrewsbury Museum.

Grinshill.—Flint flake, found near the top of the hill by the Rev. W. K. Wyley.

Hardwick, near Bishop's Castle.—Basalt celt in collection of Sir John Evans. [*Stone Imp.* 180.]

Harley.—Several stone implements from this neighbourhood are in the collection of Mr. T. R. Horton in Shrewsbury Museum.

Harmer Hill, near Middle.—A stone celt found in Godden's Lane, now in Shrewsbury Museum.

Harnage, near Cound.—Stone celt in Mr. Horton's collection.

Haughmond.—Very rude hammer stone, exhibited in 1898 at the Exhibition of Shropshire Antiquities. Small flint celt and two scrapers in the possession of Mr. D. G. Goodwin.

Hawkstone.—Several arrow heads found within the camp of Bury Walls, exhibited in 1898. Four bronze socketed celts, three palstaves and one spearhead found near the Red Castle, now in the collection of Mr. Stanier, Peplow.

Knockin.—A canoe was found some years ago 'in the bed of the watering place near Knockin Castle.' (Note by Mr. George Griffiths of Baschurch.)

Little Wenlock.—A large hoard of bronze weapons was found here in 1835. [*Salopia Antiqua*, 95. 'Between 200 and 300 spearheads.']

Ludlow.—Greenstone celt found in the Leys Meadow, now in the Ludlow Museum, together with a sandstone celt found at Mocktree near Ludlow.

Middleton-in-Chirbury.—A bronze celt was found not very far from the stone circle of Mitchell's Fold, and also a bronze dagger. Both were exhibited at the Exhibition of Shropshire Antiquities in 1898. An earthenware vessel was found, about the year 1880, in moving a large flat stone in a garden not far from Mitchell's Fold, but its fragments were not preserved. The finder described it as having three handles. (Note by Mr. George Mountford of Churchstoke.) The dagger is now in Shrewsbury Museum.

Minsterley.—Stone hammer, now in the possession of Mr. Ward of Newport.

Montford Bridge.—A stone hammer found in the Severn near Montford Bridge was exhibited in 1898.

Moreton Corbet.—Stone hammer, now in Shrewsbury Museum.

Much Wenlock.—Bronze celt now in the Shrewsbury Museum.

Netley, near Dorrington.—A stone hammer, now in Shrewsbury Museum.

Newport.—Flint arrowhead found in the Strine near Chetwynd End, in possession of Mr. T. W. Pickin of Newport.

Old Field, near Bromfield.—A cinerary urn was found in 1884 in a tumulus known as Robin Hood's Butts. It is now in Ludlow Museum.

Onibury.—An urn was found in 1852 in a tumulus near Onibury Lane during the building of the Shrewsbury and Hereford Railway. The fragments are in Ludlow Museum.

Petton.—Stone axe found some two feet below the surface in peaty soil, exhibited in 1898. A bronze spearhead found in 1825 in the moat, now in the possession of Mrs. Ellis Cunliffe.

Preston Boats, near Shrewsbury.—Stone net sinker in the possession of Mr. D. G. Goodwin.

Prolley Moor, near Wentnor.—Stone axe and two bronze celts now in Shrewsbury Museum.

Ruyton of the Eleven Towns.—A bronze spearhead found in Ruyton Moss. (Note from Mr. George Griffiths.)

Ryton, near Condover.—Two cinerary urns were discovered while building some cottages in 1905. The fragments are now in Shrewsbury Museum.

Shipton.—Two flint scrapers were found on the New House Farm in 1907, and given to Shrewsbury Museum by Mr. Howard. Mr. Hartshorne [*Salopia Antiqua*, 84] mentions the finding of a cinerary urn near to encampment known as the Ditches, near Larden Hall.

Shrewsbury.—A perforated whetstone found near the gas works is in possession of the gas company.

Stapleton.—Mr. Hartshorne [*Salopia Antiqua*, 100] mentions that an urn of imperfectly baked clay was found at the end of the eighteenth century in a tumulus at Stapleton.

The Wrekin Farm.—Mr. Hartshorne [*Salopia Antiqua*, 94] mentions the discovery, about 1800, of a number of bronze articles in a boggy meadow. Tradition says that they were all broken. A bronze celt and spearhead from this neighbourhood are in Shrewsbury Museum.

Thonglands, near Holgate.—A bronze gouge was found by Mr. J. Farmer, and presented by him in 1907 to Shrewsbury Museum.

Titterstone Clee.—Bronze celt, now in Shrewsbury Museum. Other bronze implements are recorded as having been found in this neighbourhood. ['Prehistoric Shropshire,' by R. Lloyd Kenyon, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2), iv.]

Whattal Moss, near Ellesmere.—Canoe found in peat in 1864, now in Ellesmere Town Hall.

The above list is substantially complete up to the date of publication, but there are a few implements in private hands which it has been impossible to trace.

Several bronze and stone implements have been found on the borders of the county, both in Staffordshire and Montgomeryshire. A bronze celt and spearhead from near Pool Quay are in the Ludlow Museum, and several spearheads have been found at Guilsfield.

It would be difficult to make anything like a complete list of the larger and more massive relics of Early Man in Shropshire. Stone circles (as mentioned in the previous chapter) exist in the north-east corner of the county, and tumuli are fairly numerous, but they have not been systematically investigated to any large extent; all however appear to be barrows of the round type.

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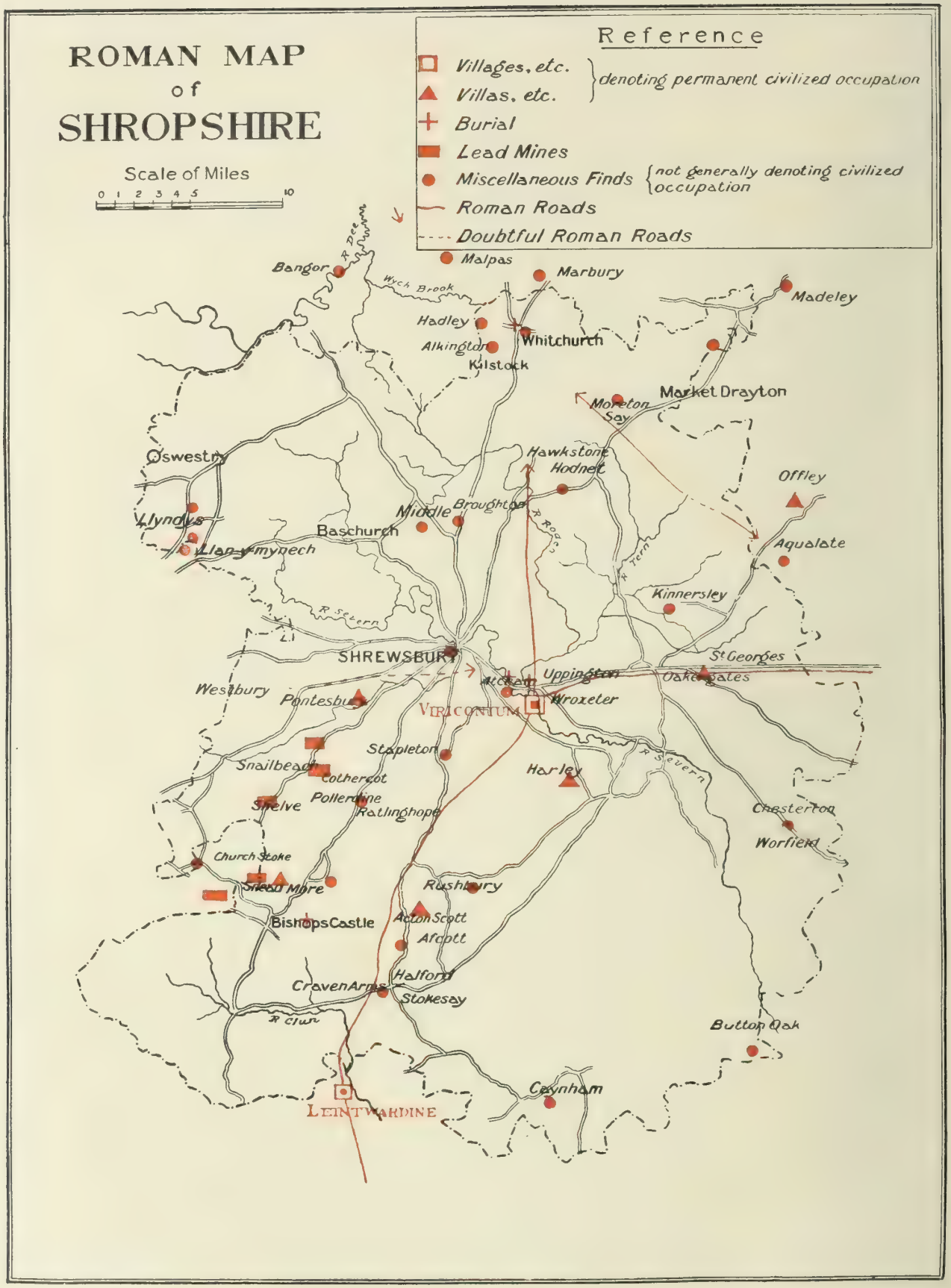
ROMAN MAP
of
SHROPSHIRE
Scale of Miles
0 1 2 3 4 5 10
Reference
Villages, etc.
Villas, etc.
} denoting permanent civilized occupation
Burial
Lead Mines
Miscellaneous Finds
} not generally denoting civilized occupation
Roman Roads
Doubtful Roman Roads
Malpas
Bangor
R. Dee
Wych Brook
Marbury
Madeley
Hadley
Alkington
Whitchurch
Kilstock
Market Drayton
Moreton Say
Oswestry
Hawkstone
Hodnet
Offley
Llyndys
Llan-y-mynech
Middle
Broughton
Baschurch
R. Roden
R. Tern
Aqualate
Kinnersley
R. Severn
SHREWSBURY
St Georges
Oakengates
Uppington
Wroxeter
Westbury
Pontesbury
VIRICONIUM
Stapleton
Snailbeach
Cothercot
Harley
R. Severn
Shelve
Pollerdine
Ratlinghope
Chesterton
Worfield
Church Stoke
Stiperstones
Rushbury
Bishops Castle
Acton Scott
Aropll
Craven Arms
Halford
Stokesay
R. Clun
Button Oak
Ceynham
LEINTWARDINE

# ROMANO-BRITISH SHROPSHIRE[1]

1. Introductory sketch of Roman Britain. 2. Sketch of Roman Shropshire. 3. Wroxeter. 4. Smaller sites, country houses, &c. 5. Mines. 6. Roads. 7. Topographical Index.

## 1. Introductory Sketch of Roman Britain

WITH the Roman conquest the student of Shropshire antiquities passes from the pre-historic to the historic period. He ceases to depend solely upon archaeological evidence; the narratives or the allusions of ancient writers lend him their aid, and he might perhaps be expected at this point to commence a regular history. In reality he cannot do that. Two facts, which are not always adequately recognized, limit him to a humbler, though not an easier, task.

The first of these facts is the character of the Roman Empire, of which Britain formed a province. Alike in its vast extent and its complex organization, that Empire was constituted on a scale which dwarfed details into insignificance. Its history—that is, its true history, apart from court scandals and imperial crimes—is the record of great developments slowly advancing among the populations of three continents. We do not meet in it that continuous individual life, that rapid succession of incidents and quick growth of tendencies, which mark the cities of ancient Greece or the little nations of modern Europe. Single men, local occurrences, are the least important items in the Roman imperial annals, and the fortunes even of so large an area as a province are merged in the movement of the whole mass. The province thus possesses no individual life which historians might trace out. We can describe its characteristics, its populousness, its degree of civilization, its mineral or agricultural or commercial wealth. We can string together into a rough narrative a few events connected with it. We cannot write a real history of it.

A second fact imposes an equally serious limitation. When the Romans ruled our island, it was not divided into its present counties nor into any districts geographically identical with them. Neither the boundaries of the Celtic tribes, nor those of the Roman administrative areas, so far as we know them, agree with our existing county boundaries. We may prefer to treat

[1] In the following article Prof. Haverfield is responsible for the two introductory sections, and for the accounts of the inscriptions and coins of Wroxeter, and the pigs of lead, and numerous scattered paragraphs such as that on the Romano-British name of Wroxeter, while the rest of the chapter is mainly the work of Miss Taylor. Each of the writers has, however, helped the other in details which it would be absurd to particularize, and Prof. Haverfield has exercised a general supervision.

Roman remains found in Britain according to counties, because the literature of the subject consists largely in county histories and the volumes of county antiquarian societies. But we must recognize that in so doing we deal with a division of land which for our purpose is accidental and arbitrary. The phrase 'Roman Shropshire' may be convenient, but, strictly speaking, it is a contradiction in terms. The limits of Shropshire coincide neither with the limits of the Cornovii and other Celtic tribes inhabiting it, nor with any divisions set up by the Romans. We can describe its Roman remains; we cannot write a history of its Roman occupation.

These two facts justify a divergence from the plan followed by most county historians in dealing with Roman antiquities found in any particular county. Hitherto it has been customary to narrate the chief events recorded by ancient writers as having occurred in Britain, and to point out which of these events took place, or may be imagined to have taken place, within the county. The result has always been to give an impression that the county had in Roman times a local individuality and a local history. We shall here adopt a different method. Utilizing the archaeological evidence, which is now far better known and appreciated than it was a hundred, or even fifty, years ago, we shall sketch briefly the general character of the Roman province of Britain, and we shall go on to describe, first in summary and then in detail, the Roman antiquities actually discovered in Shropshire. The reader will thus be able to judge how far the district was an ordinary and average bit of Roman Britain, and how far it possessed special or remarkable features.

The Roman occupation was commenced by the Emperor Claudius in A.D. 43. At first its progress was rapid. The estuary of the Thames, all that is now North Kent, Middlesex, and Essex, was seized in a few weeks, and from this base the army of invasion seems to have advanced in three divisions. The Second Legion under Vespasian moved south-west to Bath and Exeter. The Fourteenth and Twentieth Legions marched north-west to Wroxeter and Chester, perhaps making Watling Street as they went. The Ninth Legion conquered the east coast as far north as Lincoln. Within three or four years the Romans held all the south and east and midlands of Britain, as far as the Exe, the Severn, and the Humber. Most of the country had been definitely annexed, part left to 'protected' native princes. Then came a pause. More than thirty years were spent by Ostorius Scapula and the governors after him in reducing the hill tribes of Wales and Yorkshire, and during this period the 'protected' principalities were absorbed. About A.D. 80 the advance into Scotland was attempted; about 124 Hadrian built his wall from Newcastle to Carlisle, and thereafter the Roman frontier ran sometimes to the north, never to the south, of this line.

The province thus acquired fell practically, though not officially, into two marked divisions. These coincide roughly, the one with the lowlands occupied in the first years of the Conquest, and the other with the hills which were tamed later (fig. 1). The former were the regions of settled civil life, of towns and villages and farm-houses and 'villas,'—and among these is the district now called Shropshire. The troops appear to have been very soon withdrawn from them, and, with a few definite exceptions, there was probably not a fort or fortress throughout this part of our island after

the end of the first century. On the other hand, the Welsh and northern hills formed a purely military district. Forts and fortresses covered it ; towns and country houses and ordinary civilian life were absent. The Roman government was accustomed, at least in the European and African provinces of the Empire, to mass its troops almost exclusively along the frontiers, and to leave peaceful interior districts free from the needless annoyance of garrisons. Britain was no exception. The whole military force, perhaps forty thousand men, was stationed in Wales or in the north.

With the military districts, however, we are not here concerned. For our present purpose it suffices to note their existence in order to explain why Roman military remains occur rarely in Shropshire. We may pause instead to examine the chief features of the non-military districts, within which, as we have said, the area of Shropshire is included. These features are not sensational. Britain was a small province, remote from Rome and from the Mediterranean, and by no means wealthy. It did not attain the higher

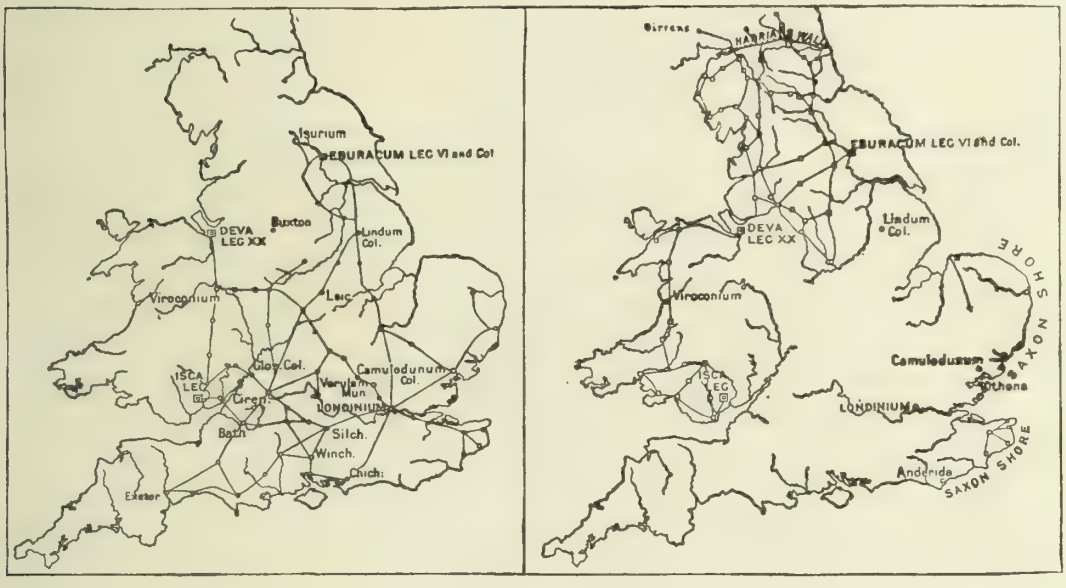


Fig. 1.—The Civilian and Military Districts of England

developments of city life, of culture, or of commerce which we meet in more favoured lands—in Gaul or Spain or Africa. Nevertheless, it had a character of its own.

In the first place, Britain, like all western Europe, became Romanized. Perhaps it became Romanized later and less perfectly than most of the Continent. But in the end the Britons generally adopted the Roman speech and civilization, and in our island, as elsewhere, the difference between 'Roman' and 'provincial' practically, if gradually, vanished during the first three centuries of the Empire. When Roman rule ended in Britain, about A.D. 410, the so-called 'Departure of the Romans' did not mean what the end of English rule in India or French rule in Algeria would mean to-day. It was not an emigration of alien officials, soldiers, and traders. Rome ceased, indeed, to send to Britain high military and civil officials and withdrew, or ceased to reinforce, the imperial troops in the island. But these officials were not numerous ; the troops had probably come by this time to consist

largely of local levies, and we may well believe that not many Romans actually 'departed.' On the other hand, we know that the gap between Roman and Britain, visible enough in the first century, had become almost obliterated by the fourth century. The country folks in the remoter parts of Britain may or may not have continued to speak Celtic during all the Roman period. That is a difficult problem, which requires further investigation for its solution. But the townspeople and the educated classes outside the towns seem to have used Latin, and on the side of material civilization the Roman influence reigned practically supreme.[2] Before the Roman period there had existed in our island a Late Celtic art of much merit, working both in metal and in earthenware, and distinguished for its fantastic use of plant and animal forms, its employment of the 'returning spiral' ornament, and its enamelling (fig. 2). This art now vanished before the Roman. In a few places, as in the Sloden potteries of the New Forest, and still more in the Castor potteries of the Nen valley (fig. 3), its products survived as local manufactures, but even these were modified by Roman influences. In general it met the fate of every picturesque but semi-civilized art when confronted by an organized and coherent culture. Almost every important feature in Romano-British life was Roman. The commonest good pottery, the so-called Samian or Terra Sigillata, copied from an Italian original and manufactured in Gaul and Germany, is purely classical in its outlines and in its ornament. The mosaic pavements and painted stuccoes which adorned the houses, the hypocausts which warmed them, and the bathrooms which increased their luxury, were equally borrowed from Italy. Nor were these features confined to the mansions of the wealthy. Samian bowls and rudely-coloured plaster and makeshift hypocausts occur even in the cottages of outlying hamlets. The material

Fig. 2.—Bronze Tankard from Elveden (Suffolk), Illustrating Late Celtic Art

[2] Mr. J. R. Green's idea of rural Britons who remained apart from the Romans, spoke British, owned some allegiance to their native chiefs, and retained their native system of law, like the Zulus and Maoris of our Empire, is, I think, mistaken. Celtic may have been spoken and the Celtic law recognized (like other systems of native law elsewhere in the Empire), and the great native families may have kept high social and local position, though definite evidence of all this is wanting. But the gap between Roman and Briton is (I believe) a gap which was soon completely bridged in most parts of the province, and the Celtic elements which survived there survived in harmony with the Roman civilization and not in contrast to it.

Fig. 3.—Vessels of Castor Ware found in and near Castor (Peterborough Museum)

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civilization of Roman Britain comprised few elements of splendour or magnificence, but it was definitely and decisively Roman.

The Romanization was thus tolerably complete; but it must be further qualified as a Romanization on a low scale. The more elaborate and splendid features of the Italian civilization, whether intellectual or material or administrative, were rare in Britain. Few of the finest products of continental manufacture in glass and pottery and gold-work came to the island, and few objects of local fabric attained a high degree of merit. Choice marbles and fine statuary are still less common, and Romano-British

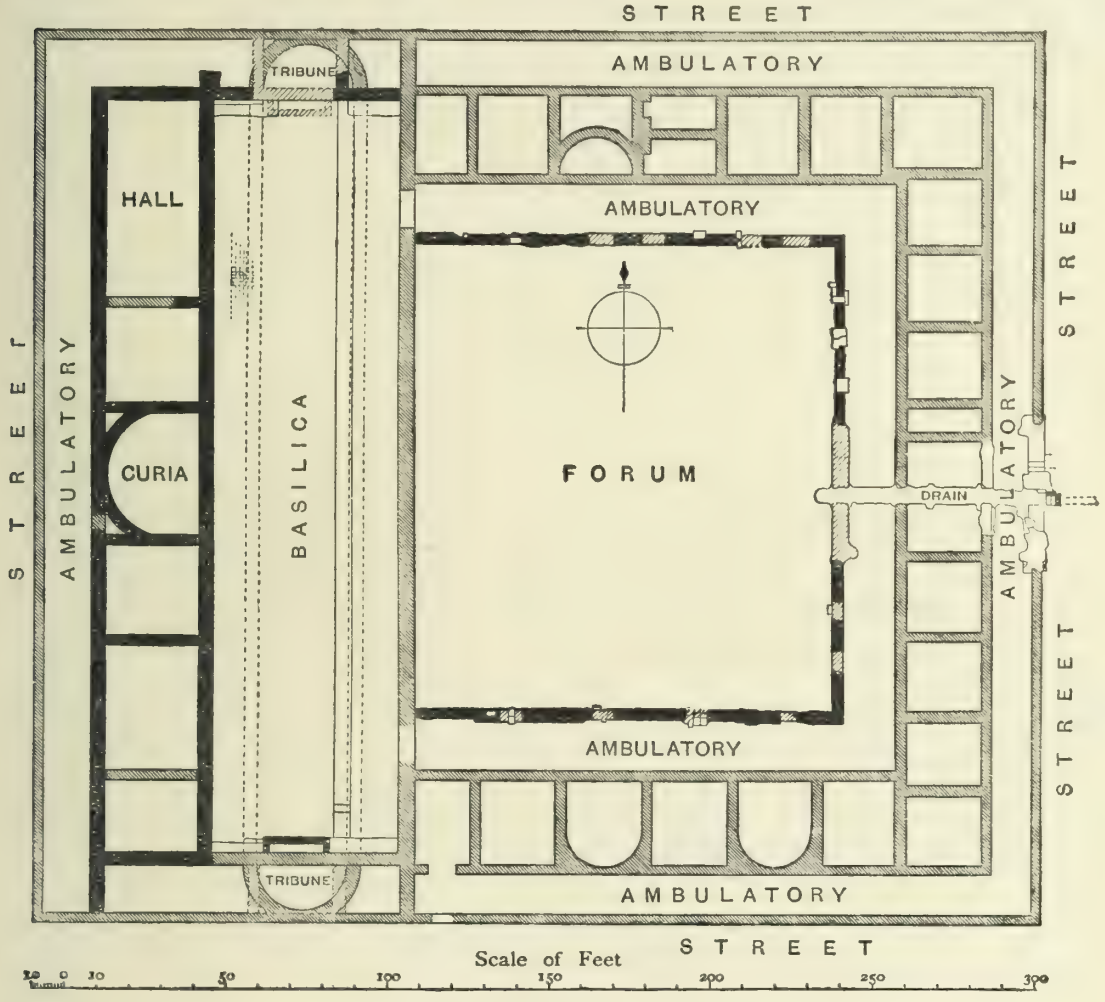


FIG. 4.—FORUM AND BASILICA OF SILCHESTER

(The structure has been altered at least once in its history. Black lines show rebuilding, the shaded lines earlier work, and the single and dotted lines in the basilica the position of earlier and later colonnades)

mosaics, though often praised by our antiquaries, are usually conventional and lack distinction. Romano-British literature was equally scanty, and the little that survives, for example the fragments of Pelagius, owes its interest to other things than literary excellence. Of organized municipal or commercial or administrative life the remains are few and their fewness is significant. The civilization of Roman Britain was unquestionably Roman, but it contained few elements of splendour or magnificence.

We may distinguish in this civilization two local forms deserving special notice—the town and the country-house. The towns of Roman

Britain were not few; but, as we might expect, they were for the most part small. Most of them appear to have been originally Celtic tribal centres; then under Roman influence they developed into towns, like the similar tribal centres in Northern Gaul. Scarcely any town in Britain seems to have attained very great size or wealth, according to the standard of the Empire. The highest form of town-life known to the Roman was certainly uncommon in Britain: the *coloniae* and *municipia*, the privileged municipalities with Roman franchise and constitutions on the Italian model, were represented, so far as we know, by only five examples, the *coloniae* of Colchester, Lincoln, York, and Gloucester, and the *municipium* of Verulam, and none of these could vie with the greater municipalities of other provinces. But while lacking in size and magnificence, the towns of Roman Britain were real towns; if a modern term be allowed, we may best describe them as country towns. Most of them were walled, at least in the dangerous and distressful days of the fourth century. Many of them had streets running at right angles in Roman fashion, a Forum and Basilica (fig. 4), built on the Roman plan, which provided in the Roman manner accommodation for magistrates, traders, and idlers; and in addition such Roman elements as public baths, small temples, perhaps a tiny Christian church or two (fig. 5), a theatre or amphitheatre (or both), and, maybe, a hotel (fig. 6). Not only the *colonia* and *municipium*, which were ruled by prescribed magistrates and town councils, but many smaller places also must be regarded as having had some form of municipal life, supplied, perhaps, by the magistrates of the canton to which they belonged. They were, in their own way, Romanized.

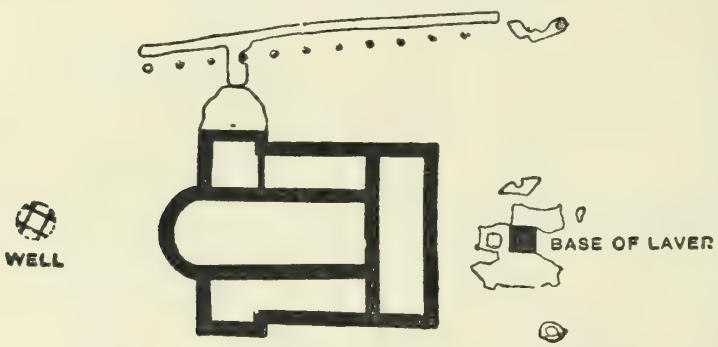


Fig. 5.—Plan of Church and its Surroundings at Silchester
(Scale, 30 ft. to an inch)

Outside these towns the country seems to have been divided up into estates, vulgarly known as 'villas,' and here again, as in its towns, Britain resembles Northern Gaul. The term 'villa' is, perhaps, somewhat unfortunate. Strictly speaking, the Roman 'villa' was the property of a great landowner, who inhabited the 'great house' if there was one, cultivated the ground close to it by slaves, and let the rest to half-serf *coloni*. The villa, in fact, was the predecessor of the mediaeval manor. Examples of such 'villas' unquestionably existed in Roman Britain. But we cannot be sure that all Romano-British estates were worked on this principle, and it seems more reasonable to avoid technical terms and to describe the houses as what they obviously were, either the country-houses of the rich landlords or the farms of the lesser men. The size of the estates is unknown. In Gaul some of the villas were estates of eight or ten thousand acres, and the owners' houses were splendid and sumptuous. In Britain the estates as well as the houses seem rarely to have been very large. A few, like Bignor in Sussex, can vie with continental residences; many are small and narrow. The landowners

were doubtless, as in Gaul, the Romanized nobles and upper classes of the native population, with perhaps a slight infusion of Italian immigrants. The common assertion that they were Roman officers or officials may be set aside as rarely, if ever, correct. The wealth of these landowners must have been almost solely agrarian; their lands were probably sheep runs and cornfields, and supplied the cloth and wheat which are mentioned by ancient writers as exported from Britain during the later Imperial period. The peasantry who worked on these estates or were otherwise occupied in the country lived in hamlets formed of huts or pit dwellings with few circumstances of luxury or comfort. But even their material civilization was Roman. Here, as among the upper classes, the native Late Celtic art yielded largely to Italian influences.

In both town and country a remarkable feature is presented by the houses. Thoroughly Roman in their fittings, they are by no means Roman

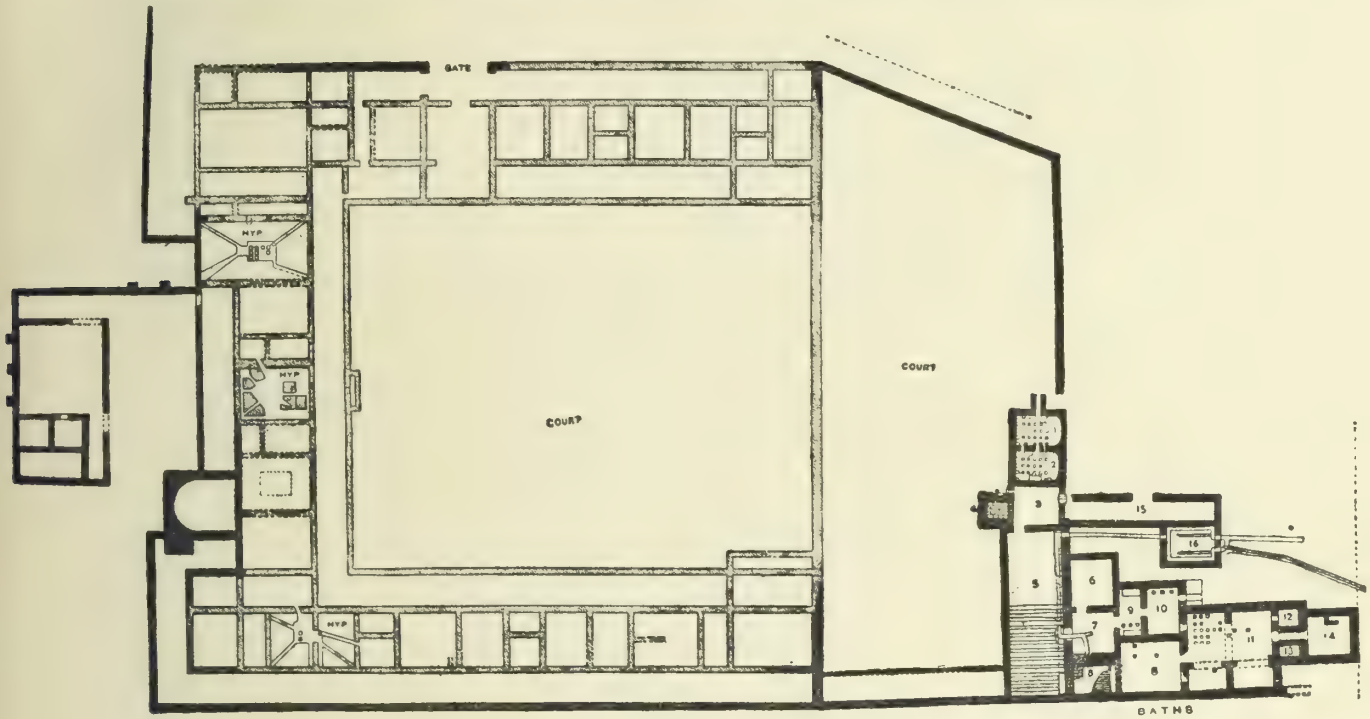


Fig. 6.—Supposed Hotel and adjoining Baths at Silchester

(Scale, 60 ft. to an inch)

in their ground plans. In this respect they do not resemble the houses of ancient Rome and Pompeii, nor are they very like the country houses which have been dug up in Italy. They belong instead to types which seem peculiar to Britain and Northern Gaul, and they very possibly represent the Celtic fashions altered by Roman contact.[3] These types are all types of country houses. Though there were towns in Roman Britain, little trace has yet been found at Silchester or Caerwent or elsewhere of houses which could be arranged in continuous rows or blocks or frontages. One common

[3] Many foreign archaeologists incline to derive the Romano-British and Romano-Gaulish house from Italy, and adduce Pompeian paintings and the plans of houses at (e.g.) Marichio, near Pola, as proofs that the corridored courtyard and other features are mere adaptations of southern originals. I cannot help thinking the Celtic element stronger than these scholars imagine.

type is that sometimes called the Corridor type (fig. 7), which shows a straight row or range of rooms with a corridor running alongside of them and generally with some slight enlargement at one end or the other. Sometimes, as in the central building at Brading (fig. 8), both ends of the corridor terminate in rooms, and a rather different kind of corridor house results. It may, indeed, be doubtful if this should be really classed as a corridor type. Another similar class contains no corridor at all, but consists of a small rectangle, in which one end served for inhabitation and the other for barn or stabling (fig. 35, p. 259). More elaborate is the Courtyard type which shows three continuous rows of rooms or corridors, set round a large unroofed

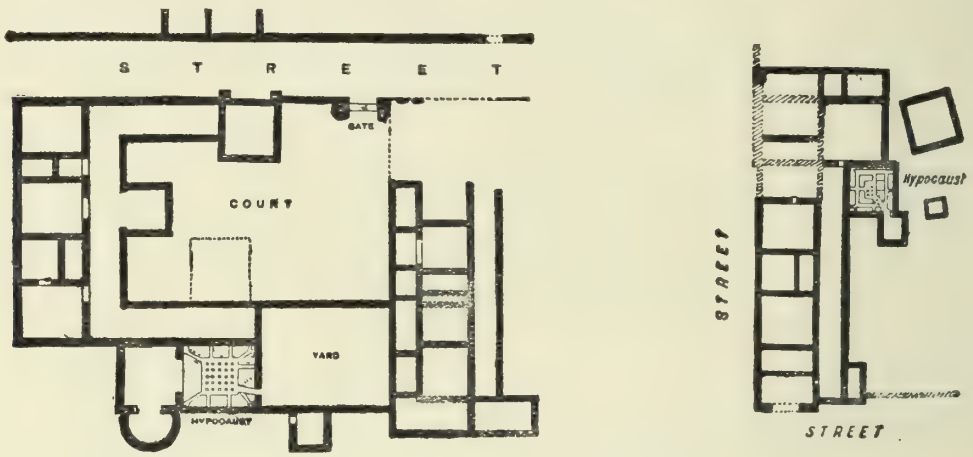


Fig. 7.—Plans of Courtyard and Corridor Houses at Silchester

(Scale, 1 : 720)

(The left-hand block shows a courtyard house with a corridor house adjacent; the right-hand figure a small corridor house by itself)

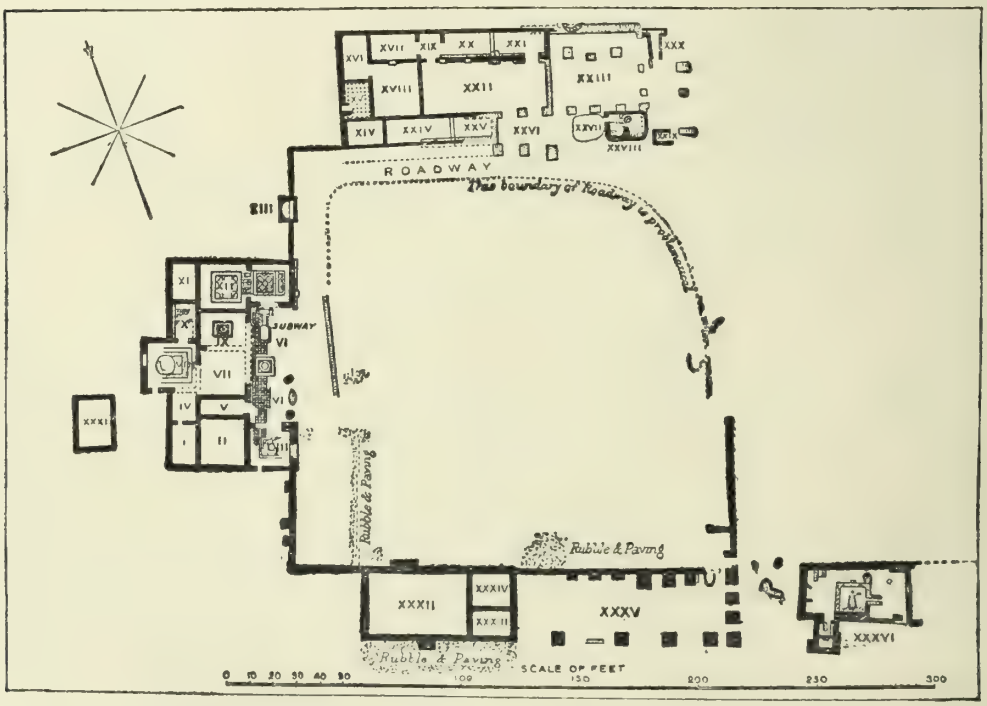


Fig. 8.—Villa, consisting of Corridor House and Two Blocks of Farm Buildings round a Rectangular Courtyard (Brading, Isle of Wight). Room VI is the Corridor

rectangular courtyard (fig. 9). Similar to this last is a further type in which the buildings round the courtyard are not continuous, but stand isolated, each in the middle of one side; in such cases the blocks may consist of corridor houses, and of barns, outhouses and farm buildings of various plans (fig. 8). We cannot detect any great difference between town and country in the distribution of these types. The statelier country villas, however, exhibit especially the courtyard types, and the second of the courtyard types occurs only in the country. In size the houses vary as widely as houses in all ages and countries. The corridor houses are generally small, and some of them measure little more than 40 ft. by 60 ft. in length and breadth. In the more imposing courtyard houses the yards alone are sometimes three times that area.

The local government of the province, so far as it is known to us, exhibits the same Romanization which marks the general civilization. We can distinguish three units of administration. The five municipalities mentioned above each possessed and administered a territory of its own, which may have been as large as an English county. The imperial domains, secondly, formed independent areas, under imperial officials. Their extent in Britain is uncertain, but the mines were normally imperial property, and we have some slight indications of imperial estates of other kinds. Thirdly, it seems that in Britain, as in Northern Gaul, tribal authorities ruled such parts of the country as were not municipal or imperial areas. These tribal authorities represented the native chiefs and nobles of pre-Roman days. But they bore sway under Roman forms and titles; they were called *duoviri*, like municipal magistrates, and their local council was styled *ordo*, like the municipal senate. Very probably this council ruled both the cantonal area and its chief town. Of these, however, we have few definite traces in Britain, and none has been yet discovered in Shropshire.

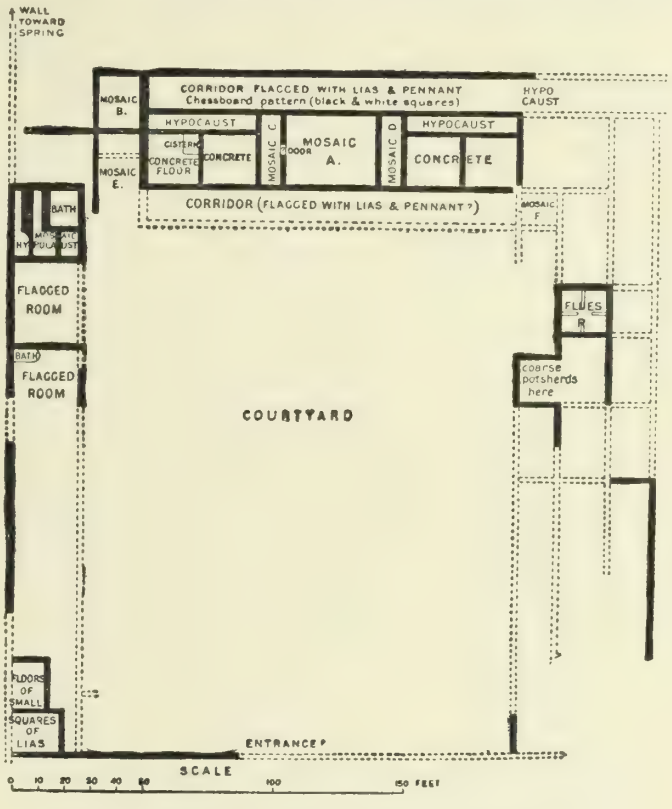


Fig. 9.—Roman Villa at Wellow (Skinner)

One feature, not a prominent one, remains to be noticed—trade and industry. We may place first the agrarian industry, which produced wheat and wool. Both were exported in the fourth century and perhaps earlier, and the export of wheat to the Lower Rhine is mentioned as considerable, but the details, unfortunately, are almost unknown. Rather more traces have survived of the lead and iron mines, which, at least during the first two cen-

turies of our era, were worked in half a dozen districts—lead on Mendip in Somerset, in Shropshire, in Flintshire, and Derbyshire ; iron in the Weald and the Forest of Dean, and to a less extent elsewhere. Other minerals were less important. The gold mentioned by Tacitus proved to be very scanty. The far-famed Cornish tin seems (according to present evidence) to have been worked comparatively little. The chief commercial town was, from the earliest times, Londinium (London). Though never, so far as we know, raised to municipal rank, it was large and wealthy. Here the chief roads of Roman Britain met, and here resided the authorities who controlled the provincial taxes and customs dues. The usual route to the Continent for passengers led from London to the Kentish harbours, especially Richborough, and thence to Gessoriacum (Boulogne), but the discovery of a pig of Mendip lead at the mouth of the Somme suggests that longer sea passages were not unknown.

Lastly the roads. Here we must dismiss from our minds the Four Great Roads which are mentioned in early English documents of the eleventh and twelfth centuries, and which have often been called Roman. Large parts of these four roads were Roman in origin, but other parts were not, and the idea of any such group of Four Great Roads is alien to the Roman road system. Instead, we may distinguish four systems, all radiating from the one centre, London. One road ran south-east to Canterbury and the Kentish ports. A second led to the west and south-west to Silchester, and thence, by ramifications, to Winchester and Exeter, Bath, Gloucester, and South Wales. A third, Watling Street, crossed the Midlands north-westwards to Wroxeter, Chester, and the military districts of the north-west ; it also gave access to Leicester and the north-east. A fourth ran to Colchester and the eastern counties, and passed on to Lincoln, York, and the military districts of the north-east. To these must be added a long single road, the only important one which had no connexion with London. This is the Fosse, which cuts obliquely across from north-east to south-west, joining Lincoln, Leicester, Bath, and Exeter. These roads must be understood as being only the main roads, divested, for the sake of clearness, of branches and intricacies. Understood as such, they may be taken to show that the province possessed a reasonable supply of internal communications. After the Roman occupation had ceased, they were largely utilized by the English, but they do not much resemble the roads of mediaeval England in their grouping or economic significance. One might better compare them with the railways of to-day, which radiate, like them, from London.

Such, in the main, was that large part of Roman Britain in which ordinary civilized non-military life prevailed—a land of small country towns and of rural estates ; permeated by the simpler forms of Roman civilization, though lacking its higher developments ; not devoid of natural resources, but not wealthy ; a comfortable country, perhaps, yet an unimportant fraction of the Empire.

## 2. Sketch of Roman Shropshire

From this general sketch of southern Roman Britain we pass to the details of our own county, Shropshire. In the main the reader will find that its details reproduce those normal features which we have just described. Nevertheless they possess their own characteristics, and it may be worth while to sum up their significance before we discuss them one by one.

Shropshire is not rich in Roman remains. It has, indeed, yielded more than some adjacent counties, for instance, Warwickshire and Staffordshire. But it can show only one large country town, Viroconium, now Wroxeter, half a dozen country houses or hamlets, some lead mines worked (so far as we know) only for one brief period, and some few miles of three main roads. The briefness of this list is partly due to the absence of excavation and inquiry. Of the country town barely one hundredth part has been uncovered, and the objects found there have not been well recorded. Of the country houses and villages we have only fragmentary vestiges which do not include even one datable coin. The lead mines equally await the explorer. Roman Shropshire is no credit to Shropshire antiquaries.

However, the paucity of Roman antiquities in our county is also due in part to another reason. This is the character of the district in Roman times. Roman Shropshire differed widely from the Shropshire of later mediaeval or modern times. In the Middle Ages it was a border county covered with strongholds, large or small, and houses fortified against the dangers of Welsh raid and pillage. In our own days it comprises or lies neighbour to important industrial or agricultural areas, and most of it is well, and some of it is much more than well, inhabited. The Roman age offers neither border fortresses nor crowded populations. The hill tribes in Montgomeryshire were quickly conquered by Rome, and during the greatest part of the Roman occupation gave little trouble to the government. The district soon ceased to be a border fronting hostile tribes, and we may confidently include it among the peaceful portions of Roman Britain. On the other hand, though peaceful, its civilian life did not develop widely. Apart from its one large country town, it was thinly peopled. The causes of this may be sought in the sphere of geography. The land lay remote from the centres of Romano-British activity, and still remoter from the centres of Roman Imperial life. Nor had it in itself any very obvious attractions for inhabitants. The mosses in the north of it were then undrained. The hills in the south were then, as now, unsuited to a crowded population, even of miners. The eastern lowland belongs to that central English plain which for some reason or other—perhaps the boulder clay of its chilly soil—failed then, as in some measure it still fails to-day, to support a populous agricultural life.

Nevertheless, this area had its real interests. The chief of these is naturally Wroxeter, Viroconium Cornoviorum.[1] This is not merely a good-

[1] The Cornovii—so the Romans called them, not Cornavii—occupied a territory which, according to Ptolemy, included Chester and Wroxeter and was bounded on the west by that of the Ordovices of north-west Wales. A Cornovian woman, presumably of this canton, is mentioned on an inscription found at Ilkley (*Ephemeris Epigr.* vii, 922). A tribe whose name is usually spelt Cornavii, doubtless a kindred branch, dwelt in northern Scotland (Ptolemy, *Geogr.* ii, 38). A cohors i Cornoviorum garrisoned Pons Aelius (Newcastle-on-Tyne) on Hadrian's Wall. Hübner (Pauly-Wissowa, iv, 1247) connects this with the Caledonian tribe, but

sized town, 170 acres in extent, that is, two-thirds as large again as Silchester; it has another claim on us. Unexplored as it still is, we know a trifle more of its history than of most Romano-British towns. If its name goes for anything, it was a tribal capital of the Cornovii, just as Calleva (Silchester) was capital of the Atrebates, Venta (Caerwent) of the Silures, Ratae (Leicester) of the Coritani. No actual remains survive to show whether it existed in pre-Roman days. One British coin,[1a] and half a dozen Roman coins have indeed been found in it, which date before the Claudian conquest, but they are hardly adequate to prove that the site was inhabited in the days of Caesar and Augustus.[2] The same paucity of British remains, however, recurs at Silchester and other sites which we have no reason to consider uninhabited in pre-Roman days. We cannot argue from it that Wroxeter first sprang to life after A.D. 43. We might, indeed, adduce a parallel from Gaul. There the *oppidum* or hill-capital of the Bituriges, Avaricum, was (we chance to know) dismantled by Augustus, and a new Romano-Gaulish town, Augustodunum, now Autun, was planted in the plain near it.[3] Similarly we might guess that the original Cornovian capital crowned the Wrekin hill, 5 miles east of Wroxeter, and that the Romans destroyed it and planted Viroconium in its stead. But it would be only a guess.

More solid knowledge comes with the Roman period. In the earliest years of the Roman conquest, as early (may be) as A.D. 44 or 45,[4] a Roman fortress was established here, garrisoned by the Fourteenth Legion, and intended to assist alike in defence or offence against the then unconquered western hillmen, and perhaps also to maintain obedience in the tribal capital of the Cornovii. Of this fortress even the site is lost. No trace remains save a few tombstones of its soldiers. Probably its ramparts were of earth, such as would vanish under the stress of later occupation, and nothing save lucky excavation could now recover its outline by tracing its buried ditches. Equally uncertain is the duration of its existence. The troops did not stay here long ; of that we may feel fairly sure. The neighbouring fortress of Chester, itself occupied soon after A.D. 50 at latest, superseded it and became the chief place of arms in this part of Britain. We may perhaps doubt whether there was or was not a brief period when Wroxeter and Chester were both held by legionary garrisons. But in any case the military life of Wroxeter was short-lived.

Its subsequent history is that of a Romano-British country town. How far it owed its Romanization to the brief presence of the legionaries we cannot tell. So far as we know, the place was just such another town as Silchester. Apparently it did not possess the privileged municipal status of a *colonia* or a *municipium*. It was more probably ruled by local magistrates

it may be more reasonably identified with the Shropshire tribe—compare *Corpus Inscr. Lat.* vii, 775, 863, and *Ephemeris Epigr.* iv, 212 ; vii, 326. It has been supposed that in later times the Shropshire Cornovii, driven out by the Saxons, retired to Cornwall and to Brittany, giving to the former its name Cornubia and to the latter the place-name Cornouailles, but all this is very doubtful.

[1a] Wright, *Uriconium*, 334, says it is a Kentish type, but this is uncertain.

[2] The British coins said to be inscribed VRICON are rightly dismissed by Sir John Evans as misread and as unconnected with Wroxeter (*Ancient British Coins*, 268).

[3] Hirschfeld, *Sitzungsberichte Preuss. Akademie der Wissenschaften zu Berlin* (1897), 1103.

[4] Mommsen suggested that it was founded by Ostorius Scapula about A.D. 48, and that its foundation is indirectly mentioned by Tacitus (*Annals*, xii, 31). But the passage in Tacitus has since been better emended by Mr. Hy. Bradley ; see *V.C.H. Northants*, i, 213.

who formed at once the 'county council' of the Cornovii and the town council of Viroconium. The capital of the Silures, Caerwent, was thus ruled by the council of the Silures, the *ordo civitatis Silurum*, as an inscription styles it, and it is likely, if not certain, that the same system prevailed elsewhere in Roman Britain.

Externally, too, Viroconium presumably resembled other Romano-British towns. Doubtless, it had its Forum and Basilica, like those unearthed at Caerwent and Silchester (fig. 4). Indeed, the discoveries of 1860 include a hall which may well be the Basilica itself. Doubtless, too, it had its public baths, and of these again some part seems to have been found in 1860. We may, if we like, go on to assume that it included also some temples and perhaps even a Christian church,[4a] a theatre, and outside the walls perhaps an amphitheatre, and that its streets ran at right angles like those of Silchester. But such assumptions are best left till the spade has touched some part of the ninety-nine hundredths of the site that are still unexplored.[5]

The inhabitants of the town were probably Romanized Britons. A few stray Italians or men of other provinces perhaps wandered hither. But the bulk of the townspeople, high and low, may be assumed to be British. Of their Romanization, the baths and mosaics, and no less the small objects found on the site and preserved in the Shrewsbury Museum, give abundant evidence. So far as our discoveries go, we meet no trace of unassimilated Celtic or native elements. Perhaps, however, it may not be fanciful to detect on a tombstone (No. 6, p. 246) a faint indication of one of the ways in which the Romanization worked itself out. The stone records the deaths of a 'wife' called Placida and a 'brother' Deuccus. The relationship of the two is not clear; they may be mother and son. But it is quite likely that this sepulchre, which combines Celtic and Roman names, belonged to a time when Roman influences were gradually overcoming native traditions.

Viroconium has no history. Beyond Itineraries and Roadbooks, its name never occurs. No event is recorded as having ever happened there. Some day, when it has been explored by the spade, we may be able to form clearer ideas of its development and character. At present we can only pass on to its last days and note that here, as at the beginning of its existence, its few uncovered remains already throw a glimmer of light on Roman Britain.

The excavators of 1860 tell us that they found everywhere in and near the Baths and Basilica abundant ashes, as of a conflagration, and many skeletons, some in the streets and five even in the hypocausts of the bath buildings. The meaning is plain. The town was stormed and burnt; its citizens were massacred in the open or met a perhaps more lingering death in the hiding-places to which they fled. The disaster was decisive. When it was past, none cared to pick up the dead bodies, to clean out the hypocausts, to sweep away the ashes from the streets or rooms. From that day Wroxeter lay desolate. For generations no man dwelt within the circuit of its walls.

We have some clue to the date of this devastation. Beside one of the skeletons found in the hypocaust lay a tiny hoard of 132 copper coins which

[4a] Mr. E. W. B. Nicholson has interpreted some scratches on a lead tablet found at Bath as a Christian letter, implying the existence of Christianity in Wroxeter in the fourth century. I am sorry to be unable to accept this interpretation. *V.C.H. Somers.* i, 283.

[5] Green (*Making of Engl.* 205) alludes to 'the theatre and amphitheatre as well as the broad streets which contrast so strangely with the narrow alleys of other British towns.' This is all wrong.

had been kept in a wooden cash-box. In the entrance of a shop near the baths lay a similar, smaller hoard of 38 coins. Each hoard plainly belonged to a townsman who perished with his city. In each hoard the latest datable coins were minted in the last quarter of the fourth century. The larger hoard ends with a much-worn Valens (died 378 A.D.), the smaller with a Gratian (died 383).[5a] Besides, the larger hoard includes six 'minims,' perhaps really 'third brass,' and the smaller hoard one. Unfortunately the date of these 'minims' is uncertain. They appear from Mr. Wright's illustration[6] to have included imitations of the well-known Roman coins with radiate crowns which were minted in the third century. It is very probable that these radiate coins were rudely imitated by forgers or others at the actual time when they were issued. The Wroxeter imitations, however, at least as figured by Mr. Wright, are too barbarous to be classed with these third-century copies. We may rather imagine that they belong to a rude coinage issued by the Romano-Britons after they had been severed from Rome. In that case, and in view of the small number of 'minims' here discovered, we should be justified in placing the destruction of Viroconium in the fifth century, and if it be asked who destroyed it, we might assume that here, as elsewhere in Britain, it was the English invader.[7]

The date is somewhat puzzling. We have been accustomed to believe that the English conquered Britain by slow irregular advances from the east and south coasts. Such advance would reach Viroconium only after many years. Indeed, the fall of neighbouring western towns like Cirencester and Gloucester has been definitely fixed at 577, the fall of Chester at about 613, and historians have actually gone so far as to date the fall of Viroconium in 584.[8] With these dates our Wroxeter evidence violently conflicts. It requires us to accept a date earlier than the generally received account by 100 or 130 years.

The Wroxeter coin-finds do not, however, lack other confirmation. Two pieces of evidence may in particular be cited here. In the first place, carefully explored sites like Silchester have yielded practically nothing[8a] which can be dated after the early part of the fifth century, neither Roman pottery nor coins nor anything which can be called post-Roman British, save a few

[5a] Valens and Gratian are also the latest emperors represented in the general lists of coins found at Wroxeter (p. 256). But these lists are so imperfect, especially in respect to late copper coins, that they do not justify an argument *ex silentio*. For that we need the excavation of the site.

[6] *Uriconium*, 338. Six 'third brass' coins labelled 'minims' and therefore presumably those mentioned in the text are in Shrewsbury Museum: they show the radiate crown, but they are much worn and their legends are illegible.

[7] Mr. Roach Smith (*Num. Soc. Proc.* 28 April 1859) suggested the end of the reign of Valens as the date and the Pict as a possible cause. But it is hardly likely that Viroconium could have been reached by Pict, or indeed by Saxon, as early as about 383, or, if reached, that it could have been so utterly destroyed as to remain for ever desolate. That implies no mere marauding band, and there was probably enough recuperative force in Britain in 383 to repair the ruined walls and build again the burnt dwellings of a large town. For this reason also I cannot accept the view, similar to that of Mr. Smith, put forward by Mr. R. Ll. Kenyon, *Shrops. Arch. Trans.* 1899, p. 172. Pict and Scot might destroy, but could not prevent rebuilding. They were pillagers who went away, not conquerors who stayed in the land.

[8] In confirmation of this, Guest and his disciple, J. R. Green, quote a Welsh poem, Llywarch Hen's Elegy on Kyndylan. They suppose this to refer to the destruction of Wroxeter and they date it to the sixth century (Guest, *Origines Celticae*; Green, *Making of Engl.* 205). I learn from Prof. Rhys that the poem has been translated and interpreted by Guest in quite unscholarly fashion, that it is several centuries later than the date assigned by Guest, and that there is no warrant for referring it to Wroxeter.

[8a] The Silchester Ogam may be fifth-century, though its age is very disputable. But it stands alone and could not in any case prove a long occupation.

uncertain minims. In other words, the evidence obtainable from these sites gives no reason to believe either that their Romano-British civilization long outlasted the severance of Britain from Rome, or that any more purely British life succeeded to it. Secondly, the tract of Gildas, probably composed soon after 530 A.D.,[9] mentions no single Romano-British town. It gives no hint even that such still existed when it was composed. The sole place-names which occur in it (besides the unidentified Mons Badonicus) are those of the Demetae and the Damnonii of the far west. The conclusion suggested by these evidences, taken with that of the two Wroxeter hoards, seems to be this—that the English destroyed the Romano-British civilization within a few decades of years. Like the Roman invaders 400 years earlier, the English would seem to have swept more or less rapidly over the easy lowlands and met no great obstacles till they reached the hills. It does not, indeed, follow that they were able to maintain all the ground over which they thus quickly spread. The tales may well be true which tell of periods during which victorious Britons drove the invading English backwards. But the conclusion remains. So far as our present evidence avails, Romano-British towns as far west as Wroxeter seem to have been utterly destroyed by a date which can hardly be later than the end of the fifth century.

But our present evidence is scanty. The excavation of Wroxeter has touched as yet no more than a tiny portion of its area. We can at present merely form our working hypotheses. We need a real and scientific uncovering of the whole 170 acres if we are ever to reach the region of reasonable certainty. Such an uncovering would teach us more than perhaps any archaeologist has yet realized. From it we might hope to learn how and when and before whose assault the city fell. We might learn further its whole Romano-British history and character. We might learn the position of the early fortress and the length of its existence. We might learn even more certainly the full nature of the civilian life of the country town, the manner and stages of its Romanization, the precise constitution of its government, the nationality of its citizens, their language, their religion, their habits and trades, their material comforts and the external fabric of their lives. All this the historian must some day discover before he can complete his picture of our island's early development.

The rest of Shropshire demands less notice. Even less explored than Wroxeter, it has far less to tell us. The country houses were certainly few, but that is all that we know. Whether they were large or small, when they were occupied and by whom, remains to be ascertained. The lead mines on the hills in the south-west of the county are but little better understood. Four, or perhaps five, pigs, all stamped with the name of Hadrian, indicate that they were government property, as we should expect, and that they were worked in the reign of Hadrian (A.D. 117–38), and, if we may argue from the uniformity of the evidence, apparently at no other time. The rest is obscure. The extent of the mines themselves, the political or economic condition of the miners, the mining system, the administration of the mining district, are all unknown to us. With this confession of ignorance our survey must close.

[9] So Mommsen; others have put it about 560 and it can hardly be later. See W. H. Stevenson, *Academy*, Oct. 1895.

It must be observed in conclusion that we have here omitted one feature which previous writers have tended to emphasize. We have said nothing of the earth-walled camps which abound on the hills of southern Shropshire. These camps are interesting. But not one of them has yet been proved to be Roman, or even to be a British work built or employed against the Romans. High above Church Stretton, a Caer Caradoc bears to-day the name of the British chief who upheld the resistance to Rome from about A.D. 45 till 50. It is likely enough that he fought along all the south Welsh frontier, in Monmouthshire, Herefordshire, and south Shropshire. He may even have tried issue of battle with the Fourteenth Legion, and threatened its Wroxeter fortress. But we have no proof of his presence at any definite spot. The attachment of his name to the Shropshire hill-fort arises, not from genuine tradition, not from discovery of significant remains, but from the patriotism of local antiquaries, which has indeed affixed his name to several other hills. Caer Caradoc is unexcavated and its age wholly uncertain. It may be much older than the Romans or perhaps much later. Such as it is, such are the other less famous hill-forts of south Shropshire. When they have been excavated it will be time to apportion them between the various peoples who have occupied the district and fought there.

### 3. Wroxeter[1]

The name of the Romano-British town which occupied the site of Wroxeter is well attested. The evidence supplied by the Itinerary and Ptolemy, by the Anglo-Saxon Wreocen or Wrocen, and by the modern place-names Wroxeter, Wrekin,[1a] and Wrockwardine, show that the site was known by some such name as Viroconium, and the identification has been accepted by the vast majority of archaeologists. Unfortunately the exact form of the name is uncertain. English antiquaries have preferred Uriconium, foreign scholars Viroconium or Viriconium, and Vriconium has also been suggested. The evidence of our ancient sources is somewhat confused. The MSS. of the Itinerary contain all these forms, there being no manuscript distinction between Vriconium and Uriconium, but the better MSS. do not give preference to any one of them. The Ravennas gives Vtriconium, which may be a blunder for Viriconium. The MSS. of Ptolemy agree on Viroconium. All this evidence plainly indicates that the word began with a consonant V, but it leaves the next three letters doubtful. In favour of 'Viroconium' we might cite other Celtic place-names such as Virosidum, Virodunum, Viromagus, which show a stem *viro-*, and we must note that some of these also contain *i* in the second syllable, and Viridunum, for example, appears beside Virodunum. It is, on the whole, quite conceivable that the original stem was *viro-*, and that this was sometimes altered to *viri-* by a slurring of the 'thematic vowel' which is philologically intelligible and not uncommon. Later still, it may

[1] In compiling this account full use has been made of the careful paper and plans published by Mr. G. E. Fox in the *Arch. Journ.* (vol. liv), for which use Mr. Fox has very kindly given permission. He is, of course, not responsible for our views on certain points on which we differ from him. He and Mr. Hope have kindly read the proofs and suggested some improvements.

[1a] It is not clear whether Wrekin is adapted from the Anglo-Saxon Wreocen-setan or is a genuinely old Celtic name. In any case Wreocen-setan is derived from Viroconium (or Viriconium) as Magasaetan in Herefordshire from Magna (Kenchester).

have been shortened to *vro-* (or *vri-*) by the influence of the accent—for which, again, analogies can be adduced[2]—and by this shortening we may explain the modern forms beginning with Wro- or Wre- which suggest a stem *vro-*. But in default of decisive evidence, the question must be left open. We have preferred in this paper the word 'Viroconium,' as perhaps the most widely used in modern times, and as in all probability more correct than the Uriconium favoured by English writers.

The site of Viroconium is some five miles south-east of Shrewsbury, on the eastern bank of the Severn, which here sweeps round to the south in a wide curve. The space within its walls is by no means level. The higher ground is on the north and east, except where it is traversed from east to west by a small stream called Bell Brook that runs into the Severn. Its highest point, about 200 ft. above sea level, is just south of this, and almost in the centre of the inclosure. From there it gradually drops about 70 ft. to the south-west corner, where the river bank is low and the river itself is fordable. Further north, the western bank rises abruptly and steeply in a continuous line of low cliffs, and forms an excellent natural defence for the site. It is, indeed, the one piece of high land which fronts the river for several miles.

Nor are its natural advantages confined to its own area. Its position has also strategic importance. It is protected from the western hills by the Severn and the Tern ; on the other hand it commands an easy passage in three directions : westwards into Wales up the Severn valley, northwards along the Tern and Roden valleys, south-eastwards along the lower Severn, and south-westwards by the Church Stretton pass to Herefordshire and South Wales. Only on the east is it unprotected ; in this direction the ground gradually rises from the Severn banks to the Wrekin, 5 miles away. But in Roman days no danger was to be feared on this side. If any of the earthworks on the Wrekin were occupied at the time of the Conquest they were doubtless dismantled by the Romans, and they were in any case too far away to matter for good or evil.

It is possible that the site was originally chosen for strategic reasons, as a Roman military post on the edge of the Welsh hills not yet subdued in the earliest days of the Conquest. Inscriptions from the cemetery certainly indicate the existence of such a post. But no traces have yet been detected of it. No part of its ramparts has survived as a portion of the later city walls, and speculation as to its extent or position is unprofitable. The walls which we know to-day, and which we shall here discuss, inclose a rough oval which is plainly a town area. It resembles indeed many other town areas in its irregular contour, and may represent the actual extent of the town at the date when the walls were constructed. The buildings that have been uncovered within the walls include a large block, probably basilica and baths, in the centre of the area, lying to the east of the road that runs across it from north to south, some half-dozen scattered dwelling-houses elsewhere, and some vaguer traces of buildings ; the total is extremely small. The great majority of the buildings still await a discoverer.

[2] Rhys, *Celtic Britain* (ed. 3, 1904), 324, suggested that the original stem was *vro-*. But I understand that he now thinks the explanation given in the text to be the more probable. He considers the Celtic name of the district to have been 'Gwricon,' and compares the Cair Guricon of Nennius. For *Vro-* one may compare a Celtic place-name in Germany, Vrocomagus (Holder, *Sprachschatz*, i, 619). Curiously enough, Viromagus seems also to occur in the forms Vromagus and Bromagus.

We can best describe the whole in its topographical order, taking first the walls, gates, and streets, and secondly the central block of buildings and other structures found inside the walls, passing thence to the cemeteries, and concluding with the inscriptions and other movable objects found in the various parts of the site.

### (i) WALLS, GATES, BRIDGE, AND ROADS (Fig. 10)

1. If, as has been suggested, the site was originally a fort, the earliest walls surrounded a small rectangle of, at the most, some fifty acres, and were probably constructed of earth. But of such earliest defences no vestige has yet been found. The walls which we can trace surround an oval of about three to four miles' circumference, and about 170 acres area.[2a] The line of these walls is certain on three sides, being marked by hedges and ditches in some places, and in others by an actual mound, which is especially visible on the south and east. On the west, above the river, all trace of the wall has entirely disappeared, and even its existence has been doubted, as, for example, by Wright.[3] We can hardly believe, however, that the town was left open and unwalled for nearly 1,200 yards, and merely defended by an often shallow river. Suggestions of this sort have often been made with reference to Roman fortified sites. But in no case has excavation ever confirmed them,[4] and we may imagine that at Wroxeter, too, the spade would reveal the existence and the exact line of the west wall. At present the one bit of evidence for its course consists in some inhumation burials found immediately west of the church (p. 242). If these are Roman—and some nails and a coin of Claudius II suggest that in part, at least, they are—they must have lain outside the walls. Further, since they are inhumations, they belong more probably to the later than to the early empire ; they cannot reasonably be assigned offhand to a period when the town was still small and its walls were yet unbuilt. Their occurrence would, therefore, indicate that the southern part of the west wall passed very close to the site of the church. But the whole discovery is so ill-recorded that minute criticism is dangerous.

The character and construction of the walls are not well attested. Bishop Gibson, writing at the beginning of the eighteenth century, describes the remains which he saw as 'a foundation for the most part made of pebble stones, about three yards thick, and a vast trench round, which in some places appears exceedingly deep to this day.'[5] In 1861–2 trenches were cut through the wall at various points (marked A on plan), in the south-east corner of the town, in a field called 'Old Walls,' which formed part of the vicar's glebe, and in the north-west corner near the Shrewsbury road, and these proved Bishop Gibson's account to be more or less correct. The foundations of a wall, 6 ft. thick, were found 8 in. to 18 in. below the surface. They consisted of small unhewn boulders or large cobble stones, and 'small

[2a] 1,400 acres, according to Wright ; *Proc. Soc. Antiq.* (1st Ser.), iv, 275.

[3] The early Ordnance maps show it closely following the course of the river : the later editions of the Survey show no clear line on the west, but neither, as is generally agreed, has any archaeological value.

[4] See, for instance, *V.C.H. Kent*, account of Richborough.

[5] Camden, *Brit.* (ed. Gibson, 1722), i, col. 153 ; hence Cox, *Magna Brit.* 637 ; Horsley, *Romana Brit.* (1732), 419.

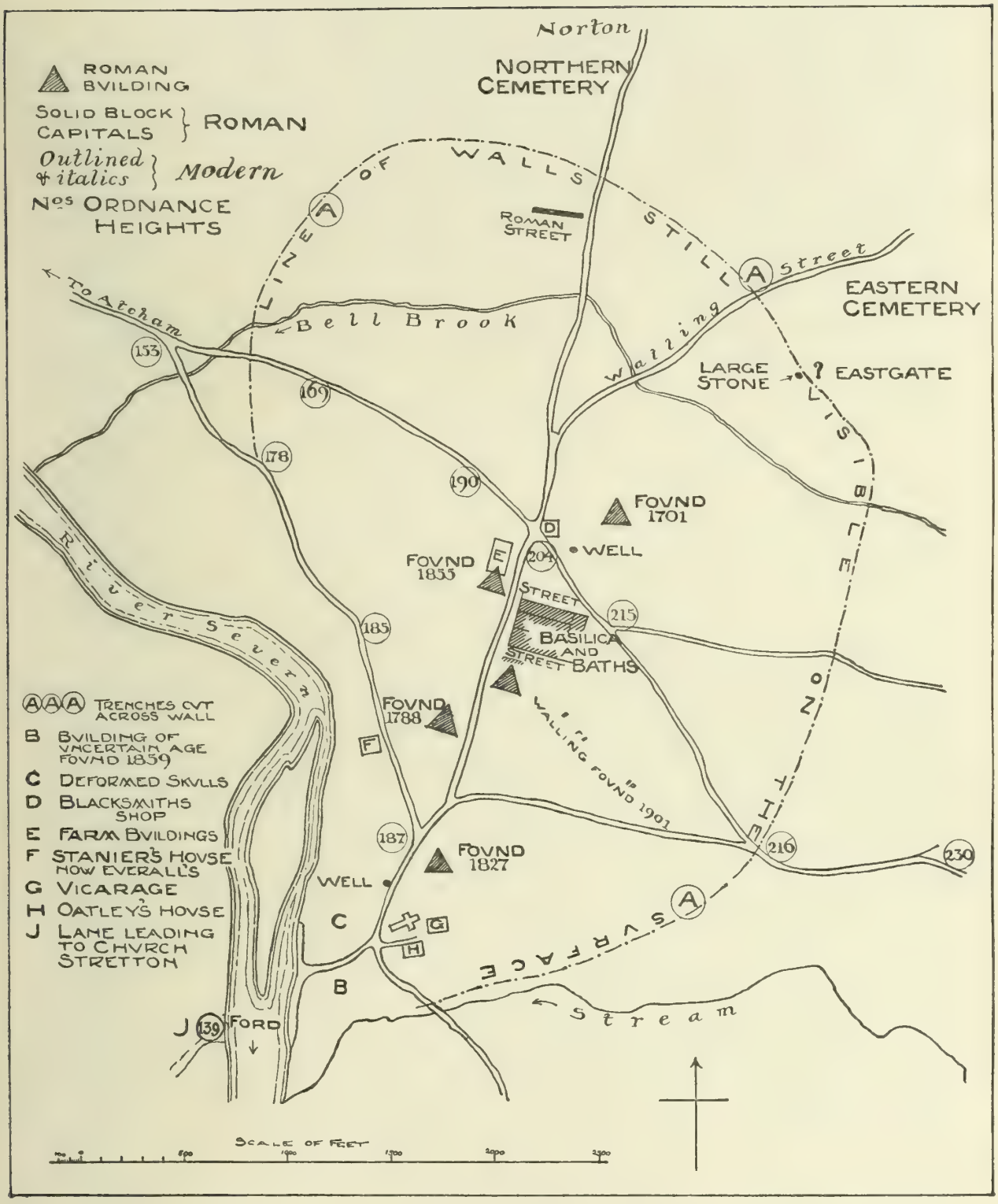


FIG. 10.—PLAN OF THE SITES OF ROMAN WALLS AND BUILDINGS AT WROXETER

stones from the quarry,' the whole built without mortar, set in clay, and laid on a bed of clay. The sides were roughly even and tolerably smoothed, but no facing stones were anywhere found. The wall had been destroyed nearly to the foundation, and what remained was probably only the core or the bottom courses intended to stand below ground. The walls were strengthened by a berme about 11 ft. wide and a flat-bottomed ditch, said to have been 95 ft. wide. Each bank of it was artificially made up of clay. The inner one was 9 ft. high, and sloped at an angle of 45 deg. from the edge of the berme; the outer one was 3 ft. high and more perpendicular. Mr. Fox notes, 'these depths can only refer to the level of silting of the ditch, and have nothing to do with its original depth.' It is, moreover, hard to believe in a flat-bottomed ditch full 95 ft. wide. The variations of level require that this should be a dry ditch, and a dry ditch of such a size and shape would be excessive.[5a] The only objects found during the excavation were a coin of Tetricus and fragments of bronze and pottery. Nothing is recorded that would fix the date of the walls.[6]

2. We may feel sure that three, if not four, gateways existed to give exit to the roads running out north, east, south, and (probably) west. But none of them has yet been found. An attempt was made in October, 1862, to discover the eastern gateway. Trenches were dug in a field to the west of Watling Street, which showed that both wall and ditch, the former here about four or five feet high, broke off abruptly close to the road, but no sign of any gate was observed. The excavations, however, were not continued on the opposite or eastern side of the lane, and it is possible that the gateway lay further to the south-east. Certainly the Roman road from London seems to have run, as it approaches Wroxeter, some yards further south than the modern lane of Watling Street (the making of which would account for the break in wall and ditch), and points more in this direction (fig. 18); moreover, in 1896 large stones were uncovered on the line of the wall about 500 ft. south of Watling Street, and were thought by Mr. Fox to indicate the position of the east gateway.[7] Excavation at this point might well reveal the truth.

Still less is known of the position of the south gate. There is nothing even to guide us in suggesting a site. All traces of the wall at the south-west corner and on the west side have disappeared. The present ordnance map marks a western continuation of the line of the ditch below the known piece of wall in the south-east corner, and also a rectangular corner at the south-west, close to the river. Wright, quoting the worthless evidence of an early nineteenth-century map, suggests an elbow gateway here, which he supposed to be in line with the street running from north to south through the town, and a bridge over the river, south of the gate. But the exact site of

[5a] It is true that town ditches in Roman times were usually wider than the ditches of forts. The ditch of Silchester as excavated at one point is 80 ft. wide; London ditch is 74 ft., though this may have been altered in the Middle Ages; Caerwent (unexcavated) is at one point 90 ft. wide. But the width becomes less effective in a flat-bottomed ditch, however deep, when it is very broad.

[6] Rep. in *Gent. Mag.* 1862, i, 192, 404; ii, 677; Wright, *Reliq.* (1862), ii, 151; iii, 169, with section of ditch by H. Davis, which is quite unintelligible; *Uriconium*, 95; Scarth, *Gent. Mag.* 1863, i, 306; *Arch. Journ.* xxi, 135; hence Anderson, *Uriconium*, 2; Fox, *Arch. Journ.* liv (*ut supra*).

[7] Wright, *Reliq.* iii, 169; *Uriconium*, 97 seq.; *Gent. Mag.* 1862, ii, 677, 1863, i, 306; Johnson, ibid. 1863, i, 595, and *Arch. Journ.* xx, 196, says that an attempt was made to find the site of the north gate, meaning the east gate. The north gate has never been found. Hence Scarth in *Arch. Journ.* xvi, 278 *n.* xxi, 135; and Fox, *Arch. Journ.* liv.

bridge or street is as yet unknown (below, sec. 3). And if, as we have suggested above, the west wall ran much further east than is generally supposed, the gateway must also have been further east, and Wright's suggestions can have no probability. An attempt in 1859 to find this gate revealed a small square room attached to a more continuous wall at the south-west corner above the ditch and near the river (marked B on plan). It was thought to have been a tower, but the masonry was rough, and might in this respect have been either Roman or (as Wright thought) mediaeval. The excavations revealed nothing of certainly mediaeval date. There emerged, however, with Roman coins and other objects, including a coin mould of Julia Domna, a sculptured head which Wright decided was 'late Roman work,' while Scarth called it mediaeval, and Mr. Fox notes that if this head is the same as that in Shrewsbury Museum it is certainly mediaeval. Nothing certain is known of a mediaeval occupation of the spot. Wright declares that a mediaeval castle, called Arundel Castle, stood here, and alleges the existence of documentary evidence. Mr. Page tells us that he has found no such evidence. Altogether, such doubt exists as to the date of this find, that it cannot be accepted as evidence of any kind, and we must leave the site of this gateway, with the west wall, as yet unknown.[8]

3. Of a bridge over the river only the slightest indications exist at present. Camden states that the foundations of a bridge were 'lately uncovered a little higher up [than the ford] in making a fishing dam.' Bishop Gibson, writing in 1772, remarks that there is 'still discernible at low water the foundation of a stone work, which is probably the remains of a bridge,' but where exactly this was we do not know. Hartshorne in 1841 says that the 'foundations of a bridge below the ford were visible two or three years back,' and it is to this, perhaps, that Wright refers at a later date. Perhaps Camden mistook the exact site of the foundations. It is obvious that a bridge must have existed, in addition to whatever ford there was, over such a quickly rising river as the Severn, and for the use of a town of such a size as Viroconium. The site below the ford, where the banks are less steep than higher up, would be a convenient position, and would suit the road running south-west (see section on roads). With this vague description 'below the ford' we must rest content until either the south gate or the street running from it has been found to give us some indication of a more exact site.[9]

4. We should expect to find the streets here, as in other Romano-British towns, running quite straight and laid out at right angles to one another, with a large inclosed square near the centre forming the Forum. And we have some slight indications of such a ground plan in Viroconium. In 1860 a street was found[9a] running north and south near the south-west corner of the large buildings in the centre of the Roman area (fig. 11). This, if continued north, would have passed some 40 ft. west of these build-

[8] Six-inch Ordnance Survey, xlii, NW. The older maps mark a curious elongated curve at this corner, the later ones leave this out. In any case the evidence of these maps is hardly worth consideration when they do not record actual existing features. Wright, *Brit. Arch. Assoc. Journ.* xvi, 207–9; *Uriconium*, 100; Scarth, *Arch. Journ.* xvi, 272, 273, hence Anderson, *Uriconium*, 4; Fox, *Arch. Journ.* liv (*ut supra*).

[9] Camden, *Brit.* (1607), 449; (ed. Gibson, 1722), i, col. 653; hence Cox, *Magna Brit.* (1727), 637; Hartshorne, *Salopia Antiqua*, 133; Wright, *Brit. Arch. Assoc. Journ.* xvi, 208; *Uriconium*, 100; Scarth, *Arch. Journ.* xvi, 273, xvii, 241; hence Anderson, *Uriconium*, 4; Fox, *Arch. Journ.* liv.

[9a] It is marked on Wright's plan. There is, however, no reference to it in any account of the excavations.

ings (for which reason the buildings were supposed to have bounded the eastern side of a large open space), and run in a straight line to Norton, and there would have, perhaps, become the road that leads to Chester. The same street, if continued south, would have run slightly east of the lane now leading to the river and passed on the east side of the church. Traces of such a road have been perhaps actually found, if Scarth is correct in stating that the bridge below the ford was 'connected with the city wall by a road, which is often come upon in ploughing.' This road seems to have passed out of the city on the east, close to B on our plan (fig. 10).

The eastern road possibly entered the town farther south than the modern lane of Watling Street, and we may imagine, if we like, that it crossed the Bell Brook and the street running north and south, and was continued in a street that ran straight on west and gave access to the road that led just south of Shrewsbury into mid Wales. But this is only conjecture.

Other streets ran east and west, bounding the north and south ends of the large central building. Of these we chance to know the construction. That on the north was 'a wide street paved in the middle with small rolled stones from the river, with a row of kerb stones and a space on each side apparently unpaved.' That on the south side was over 20 ft. wide with side walks: the pavement was 'formed of small stones, such as might be gathered from the gravel, well put together and hard beaten in and presented an appearance not much unlike that we call macadamising. A row of kerb stones was placed on each side.' Wright thought he found another street running south from the main building, provided with a well-made gutter, of carefully squared stones, running near the walls of some buildings, 'about a foot deep and wide,' and 'in places square stones are laid lozenge fashion, apparently intended for stepping stones' (fig. 11, k). Mr. Fox accepts this, but there seems no decisive proof of a street here, and the gutter may conceivably have belonged to the adjacent house.

A street was found in 1859, near the north wall, running west from the street which leads northwards about 200 yards south of the north wall (fig. 10) and parallel to it.[10] Other streets could perhaps be traced in existing lanes of specially straight character, but this is a dangerous and deceptive process.

### (ii) THE CENTRAL BLOCK OF BUILDINGS (Plan, fig. 11)

1. We now pass to the actual buildings found within the walls, and first to the block right in the centre of the area. This stands on ground that slopes gently to the south from the highest point within the walls, and consequently the buildings on the north stood higher than those south of them. The block consists of a large hall, some baths, one or two shops, and probably some store-houses. Streets bound its north and south sides: its east end is still unexplored, and we do not know what lay west of it. It was excavated in 1859–61 and in 1867 by local subscribers, under the

[10] Wright, *Brit. Arch. Assoc. Journ.* xv, 214, 219, 224; xvi, 158, 160, 162, 213; *Uriconium*, 106, 184–6; Scarth, *Arch. Journ.* xvi, 274; xviii, 243, 247; Fox, *Arch. Journ.* liv, 125, 126, mistakes the street near the north wall, found in 1859 running east and west, for one running north and south. No street is recorded on the east of the central block of buildings, as marked on Mr. Fox's plan; excavations were not continued here.

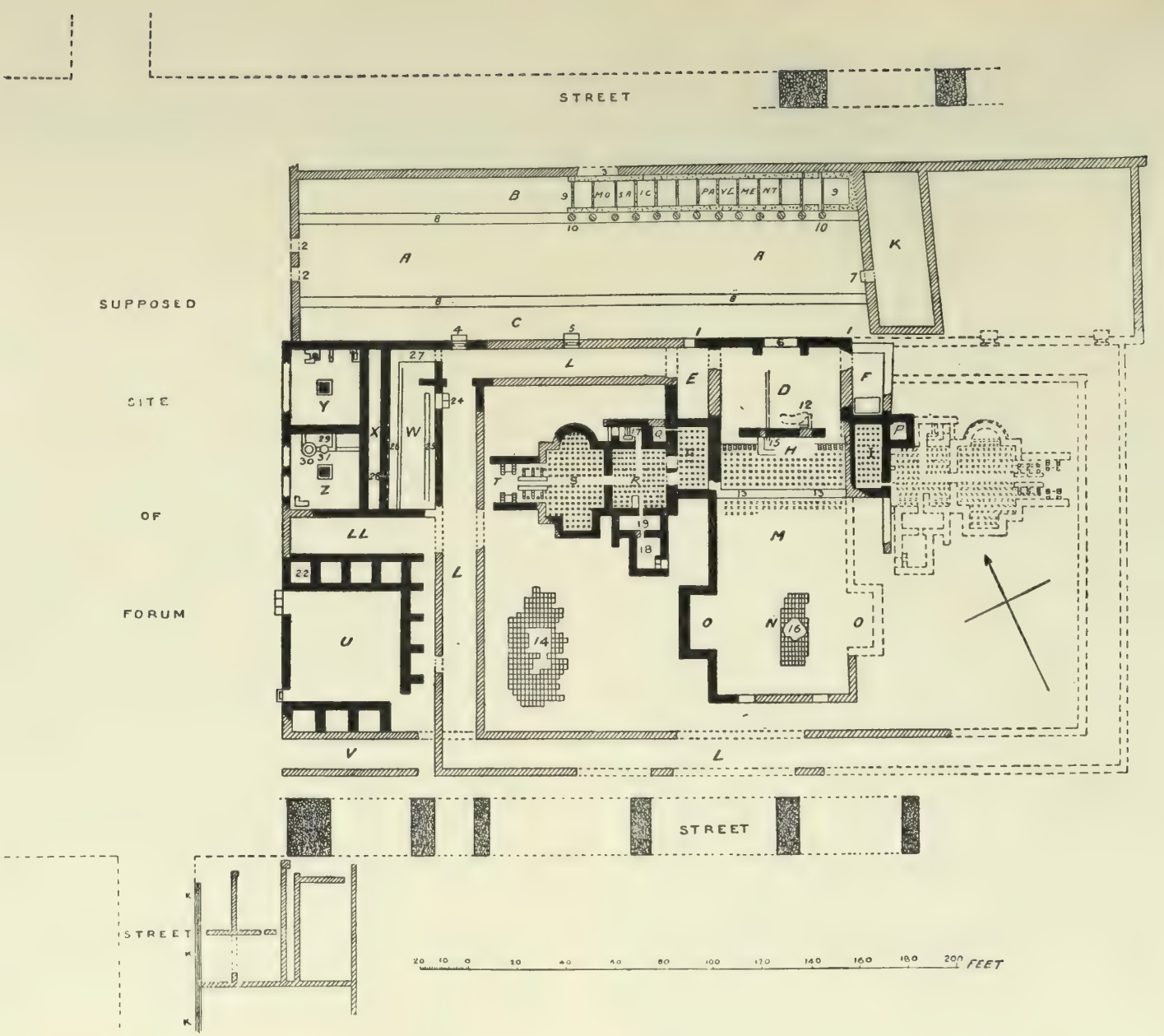


FIG. 11.—PLAN OF BASILICA AND BATHS, WROXETER

*(Adapted from Plan by Mr. G. E. Fox, F.S.A., with the east end conjecturally completed)*

supervision of Mr. T. Wright and Dr. H. Johnson, but the work was very unsatisfactorily carried out. Further excavations were undertaken in 1896 under the care of Mr. Fox, to clear up a few of the many points left doubtful by the carelessness of the earlier workers, and more by Mr. Hope in 1899.

The principal building was a very large roofed hall, 229 ft. long from east to west, 67 ft. wide. It was divided by colonnades or arcades into a central nave (A) 30 ft. wide and two side aisles (B, C) each 14 ft. wide, the columns being spaced 8½ ft. from one another. The evidence for this plan was deduced by Mr. Fox from the existence of sleeper walls (8), the arrangement of the mosaics found in the north aisle (9), and the discovery, among the ruins of the baths, of four drums of columns and the base and part of a column, which forms at present the font of Wroxeter Church,[11] and which he assumes to have belonged to these colonnades. Mr. Fox also suggests that the colonnade was continued across the east and west ends, that the columns bore a stone entablature and above that a clearstory with windows supporting a wooden roof, and that the whole was as much as 60 ft. high. The hall was provided with six or seven entrances, two at the west end (2, 2), which, from the stones scattered near it, were thought to be of considerable architectural magnificence, three (4, 5, 6) on the south side, one (4) with a much worn step down, a sixth (7) with a step in front of it giving access to an annexe at the east end, and possibly a seventh (3) on the north side. A piece of the south wall (1, 1), 72 ft. long—in the seventeenth century 100 ft. long—with the entrance to the baths, still stands 20 ft. above the ground, and has been known since the sixteenth century as 'the Old Work' (fig. 12). It shows us the construction of the walls. They were laid on a foundation 7 ft. deep, and were 3 ft. 4 in. to 3 ft. 6 in. thick, and consisted of a core of rough stone and mortar, faced on each side by small red sandstone blocks, with courses of bonding tiles, and plastered inside with coloured stucco. To judge by the surviving drums and columns the pillars were of grey sandstone grit, stood about 27 ft. high, and belonged to the Corinthian order. The floor of the central nave was covered with a herring-bone pavement of red brick; and the north aisle, and possibly also the south, with mosaic in good, plain, geometrical designs in greenish-black on creamy-white and occasionally a little red, arranged in panels about 8½ by 15 ft. (fig. 13). The roofs were covered with stone or brick roofing tiles. The only objects found inside, besides architectural fragments, were some links of a chain, a steel axe-head, bits of several 'padlocks,' and a small iron trident or candlestick, 5½ in. long.[12]

The large dimensions of this hall and the excellence of its mosaic pavements prove that it was a building of real importance. If we ask what use it served, we can best answer that it was a basilica. In shape and plan it resembles those halls found among the ruins of various Roman towns, on the Continent and in this island, which stood contiguous to the Fora, and seems to have been used for public meetings, law courts and the general official business of the municipality, and bore the name basilica.

[11] Scarth, *Arch. Journ.* xvi, 266, also mentions that according to local tradition a row of bases of columns had once existed where Mr. Fox places them, but at p. 68 in the same volume he uses almost the same words to describe columns dug up near the building found in 1855 (No. 2, p. 237). The arrangement of the columns suggested by Mr. Fox is indicated on the plan at 10.

[12] Wright, *Uriconium*, 264.

Fig. 12A.—Ruins of Baths and Basilica of Wroxeter, with the Wrekin in the distance

Fig. 12B.—Baths and Basilica: Nearer View

(The archway in the foreground to the left is 17 on the plan (Fig. 11); the arches in wall above it belong to the roofing of Room D)

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Adjoining the eastern wall of the basilica, but at a slightly higher level, and with an entrance communicating with it (7), was a room (K), about 66 ft. from north to south and 30 ft. wide. Wright, 'from the set off on the walls and other circumstances' considered it to be 'a quadrangular yard or court'; beyond it again, were other inclosing walls which were thought to contain a garden, since no sign of any pavement was found, but excavations were continued no further to the east, and the street marked by Mr. Fox in his plan as bounding this side, is never recorded as having been found. Instead, foundations of buildings were said to be visible when the corn was ripe.

2. Immediately south of the basilica and adjoining its eastern end are the remains of large baths, as yet explored only in part. These seem to

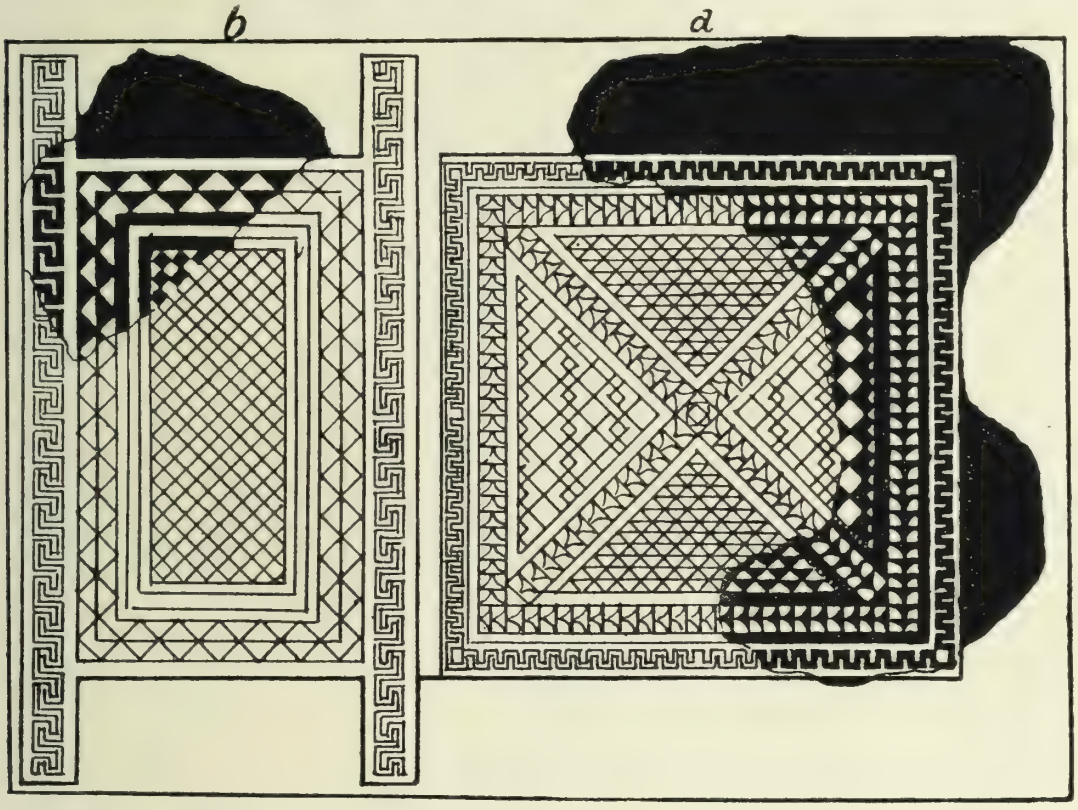


FIG. 13.—MOSAIC FLOOR IN THE NORTH-EAST CORNER OF BASILICA (PLAN, 9), COLOURED GREENISH-BLACK AND CREAMY-WHITE

(*b* is a specimen of the panels in the north aisle; the square shape of *d* is due to its corner position)

stand inside of an open courtyard, 140 ft. wide and 190 ft. long, so far as traced, surrounded by a roomy corridor (L on plan) 12 to 14 ft. wide. On the north side the corridor is interrupted and the buildings adjoin the adjacent basilica. They consist of two parts, firstly rooms D to I, connected by a doorway (6) with the basilica, and possibly erected in the first instance for the purposes of the basilica, and not of the baths, and secondly on the west and south of these, rooms M to T, erected unquestionably for the purpose of the baths. The explanation of the whole is extremely complicated, at least on our present imperfect evidence. If we confine ourselves to the actual structures traced, we shall notice that the principal furnace and stoke-hole were at T at the extreme western end of the buildings. Hence the hot air passed under two

hot rooms supported by pillared hypocausts (S, R) and probably equipped with stone basins for cold water and with hot baths in various recesses. The second of these hot rooms, R, seems to have had a second furnace on the south side (18), communicating with the courtyard by two steps, while a small room between the two (19), may have (as Mr. Fox thinks) contained boilers for heating water. On the north side of R was a tiny room (Q) with a door apparently opening eastwards, possibly intended for a cupboard, and also some steps (17) which descend from a small doorway opening on to the courtyard, and give access to the hypocaust by an arched doorway. This arrangement was perhaps intended either to facilitate cleaning or for letting in cold air and effecting the ventilation of the hypocausts. Much rubbish—coins, pins, nails, buttons, potsherds, bones of birds and animals—was found lying at the bottom of the steps.

The explanation of the block lying east of this is much more difficult. It is complicated by two facts. First, the baths probably stretched east from it; indeed, their foundations may be seen in cornfields. Secondly, it was perhaps originally constructed for a different purpose and subsequently connected with the basilica. We can discern, however, at G and I, two hot rooms, each jacketed with box tiles, the one warmed from the furnace at 18 and the other from a furnace further east, and both serving perhaps as perspiration rooms. Outside of I was a small room, perhaps a cupboard (P). Between these, G and I, was a large apartment H, placed over a hypocaust, but apparently reconstructed several times in the course of its history, and perhaps not always a hypocaust room. It contained vestiges of a sunk bath, 15 ft. 6 in. wide and 15 ft. long (15), intended perhaps as a cold bath, previous to the construction of the hypocaust and supplied by a drain (fig. 14) coming from the north. Unfortunately, the south wall of this room (H) has not been discovered and its supposed traces at 13 are not at all clear. Nor is it certain how the rooms M, N, O were used. Mr. Fox suggests that the centre of N contained a swimming bath, since at 16 there are traces of a sunk floor of large tiles, 10 ft. by 30 ft. in extent, and 3 ft. deep. In the south wall of O were two entrances into the courtyard facing the south corridor. On the north of these rooms and communicating with H by two doors was a hall D, 49 ft. long and 33 ft. wide, roofed, as Mr. Fox thought, with an intersecting vault in six compartments. On each side was a chamber with a barrel vault (E, F). These rooms are less closely connected than H, P with the baths, but F on the east of the hall contained a bath with a step round it

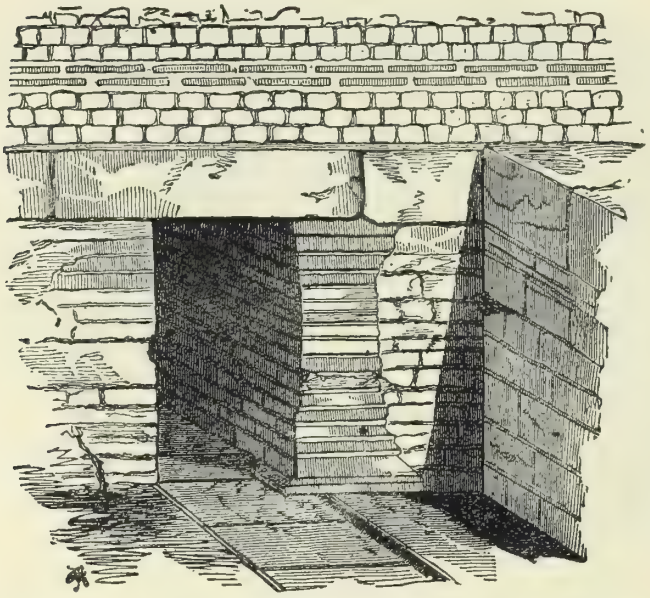

Fig. 14.—Drain or Sewer below the Baths, Wroxeter

(After Wright, *Uriconium*, 217)

at its south end. The existing floors of the hall D, and also apparently those of E and F, are at a higher level than those of the rooms south of them, but seem, according to Mr. Hope, to have been raised in Roman times; from the south wall of D some stonework (12) once projected about 5 ft., inclosing a tile pavement; this, however, had been destroyed in their reconstruction and the tiles covered with *opus signinum*. Finally, we may mention in the south-west corner of the courtyard, and detached from the baths, a reservoir (14) 4 ft. deep, paved with flagstones, into which potsherds had been thrown.

It will be obvious to the reader that the ground plan of the baths is imperfectly known. The completion of this plan and the determination of the uses of the various bathrooms has been attempted conjecturally by Mr. G. E. Fox. It is fairly obvious, as has been said, that the part already excavated is the west wing and centre of a larger structure; and both existing remains and analogies from other bath buildings elsewhere suggest that the unexplored building on the east was more or less identical in plan with the explored western wing. That is, the rooms R, S, T, 17, 18, 19, were repeated on the east of the central rooms D-O, and the corridor L, L, L, was continued round the eastern sides of its courtyard. The rooms F, I, and P, paralleled by the rooms E, G, Q, on the west, form the visible beginning of such an eastern wing, and the untouched space on the east between the excavated buildings and the extreme eastern wall (see plan) would precisely admit of this eastern extension. This arrangement of a central building with two parallel wings provided two similar sets of baths, one probably meant for men and the other for women. Starting with this conjectural restoration, we may go on to ascribe uses to the various rooms. D was probably the entrance and dressing-room or *Apodyterium*, H and M the warm room or *Tepidarium*, G and I perspiration rooms or *Sudatoria*, R and S, with the rooms similar to them on the eastern side, hot rooms or *Caldaria*, with hot baths in various recesses and stokeholes and furnaces at 17, 18, 19, and T, while N and O were a swimming-bath and E and F cold rooms or *Frigidaria* containing cold baths. The whole fits the normal scheme of the Roman bath which is familiar to us in our modern Turkish baths.

The construction of the walls of these baths appears to be much the same as those of the basilica. They were throughout 3 ft. thick. Artificial tufa was used with rubble to make a core. The facing was of small squared sandstone courses with bonding tiles. But in some cases, as in the sills and jambs of the doorways of Q and E and in the apse of S, very large stones had been employed for facing. The walls were plastered with stucco, inside and out; bits of striped yellow and red plaster were found outside the apse of S, pink cement in the hall D, and some in M, and on the stuccoed wall of H an unintelligible inscription had been scratched. Part of the walls of E and F appear to have been decorated with black and white and red tesserae in a guilloche pattern, or braidwork, according to Mr. Fox,[13] and a bench, with a mosaic-covered seat, was found, as Mr. Hope tells us, near the north wall of D. No traces of any mosaic flooring appeared, except one bit in

[13] Only two other instances of tessellated walls are known in Roman Britain, one at Wingham in Kent (*Arch. Cant.* xiv, 135) and the other at Silchester, *Arch.* lix, 352. Both are in connexion with baths, and the mosaic is probably used against damp, like tiling in modern lavatories.

dark green and cream colour near the north wall of D, and a cream-coloured pavement at the bottom of the bath in F. But bits of concreted floors of lime and burnt clay, 8 in. thick, occurred in R and S; cement floors in N and the courtyard, and herring-bone pavements of red brick in P and Q. The roof stones were hexagonal in shape and worked from micaceous slate or 'laminated sandstone,' while the vaulted roofs of D, E, and F, were formed of box tiles or hollow voussoirs plastered over with coloured stucco. Window glass, $\frac{1}{8}$ in. thick, also occurred, but very few other small objects were found. Mineral coal, burnt and unburnt, was noted outside the furnace T; a mass of iron, somewhat melted and once perhaps an anvil, in 18; charred wheat in D, and the pins, coins, buttons, nails, potsherds, glass and bones of birds and edible animals—including wild boar and stags—and oyster-shells already mentioned, at the foot of staircase 17. A 'first brass' coin of Trajan was found embedded in the mortar of the 'old work' in 1841.[14] Another of Julia Domna was found also near the 'old work' and exactly fitted the coin mould found near the river (see p. 225). Everywhere was broken building material. A capital, perhaps of a Doric column, was found near the doorway (6) leading from the basilica to the hall (D). A shaft of a column was met with on the staircase 17, and assigned by Mr. Fox to the colonnade. A piece of 'cornice with rather elegant mouldings' occurred in or near room 18.

One interesting discovery of a special kind was made in the baths. A considerable number of skeletons were found in or about them. The court-yard north of S and T yielded a 'number of human remains.' Between the apse of S and the top of the little flight of steps at 17 lay the skeleton of a baby. Yet more noteworthy were five detected inside the hypocausts, two (one of a young person, the other described as headless) at the east end of H, and three in G—two of them (apparently females) lying at the foot of the north wall, and the third (an old man) crouched up in the north-west corner. Close to the man lay a heap of copper coins (132 in number), once apparently contained in a 'small wooden coffer.' These dated from the late third and the fourth century.[15] These skeletons plainly indicate some destruction of the town by enemies. In particular a few of the townspeople must have sought shelter in the hypocausts, but met their deaths either by starvation or more probably by suffocation due to the burning of the sur-rounding buildings. The date of the coins show that this destruction cannot have taken place many decades after the end of the fourth century.

3. We now pass from the bath-buildings to other rooms lying west of the corridor L, numbered in the plan U–X. Behind the north end of this corridor stood the latrines (W). They were provided with an entrance from it by two steps at 24, and since a door into the basilica (4) adjoined, we may suppose that they served alike for visitors of baths and of basilica. They were drained by two trenches, $2\frac{1}{2}$ ft. and $3\frac{1}{2}$ ft. wide and about $2\frac{1}{2}$ ft. deep (25, 26), running along the sides of each wall, and probably ending in a cesspool some 9 ft. deep at the northern end (27). This cesspool seems to have been

[14] *Brit. Arch. Assoc. Journ.* Glouc. Congress, 67; hence Wright, *Uriconium*, 332.

[15] The precise list as given by C. R. Smith (*Num. Soc. Proc.* 28 April, 1859) is 1 Tetricus, 1 Claudius Gothicus, 13 Constantine I, 1 Constans, 36 Constantine Junior, 5 Constantius II, 1 Julian, 2 Helena, 1 Theodora, 24 Urbs Roma, 34 Constantinopolis, 1 Valens, 6 minims and 6 illegible.

drained by a culvert or sewer large enough for a man to walk along, apparently running east and west, but its course was not traced; probably, however, it also drained the baths. A space 5 ft. wide and about 70 ft. long (X) ran parallel to the latrines adjoining their west wall, and an aperture 10 in. high and 6 in. wide (28) penetrated this wall. This space was thought by the excavators to be a drain; Mr. Fox preferred to call it a reservoir for water to flush the latrines, since the narrow aperture seems more fitted for sluice than for drain. The floor of the latrines was paved with bricks in herring-bone fashion. Many small objects were picked up in the space X, including the bronze head of a lion which perhaps ornamented a sword hilt; a signet ring with a red cornelian intaglio on which was engraved a device of two parrots (?) on perches eating out of a bowl; roof tiles, pottery, and coins of Constantine. Here also, as it seems (between Y and the baths), were found three small rectangular slabs of white steatite or soapstone 2½ in. by 2¾ in., with bevelled edges and smoothed on one side, which were thought to be painters' palettes and were connected by Wright with the 'enameller's shop' at Y. One bore an inscription (fig. 20, no. 16).

On the west of the latrines, and forming the western boundary of this block of buildings, were two quadrangular rooms about 4 ft. square (Y, Z), facing west and taken by the excavators to be workshops of enamellers and metal-workers, opening on to a street or public place. We cannot do better than here give Mr. Fox's account of them:

> The western wall of each chamber had two wide openings on the roadway (that of chamber Y had lost its central pier), each formerly filled, as shown by the stonework of the jambs, by a framework of wood on which doors were hung. In the centre of each area was a mass of masonry, which might have been a table, but was more probably the base of a pier supporting the roof. On the northern side of chamber Y were various remains of masonry, two of which appeared to have contained small furnaces. Many pieces of scoriae were scattered about, and amongst them lay the bowl of an iron ladle.
>
> The floor of each chamber was of cement laid nearly flush with the door sills, but the floor of Z had the peculiarity that it showed a surface of cement spread over less than half the western half, the rest of the area being filled, at a lower level, by a bed of sand, said to have been brought from a distance, and perhaps used for moulds for casting. Pounded granite was also found on this bed of sand, and 'many fragments of fine glass were also scattered about.'[16] On the northern side of the same chamber was a kind of bin (29) formed by a dwarf wall with a cross one about the middle of its length. In this was found a quantity of scoriae and other refuse. At the corner of this bin nearest the door stood a cone about 6 ft. high, built of various materials—clay, stones, and, here and there, pieces of mineral coal (30). In one side of the cone was a furnace 'whose internal surface was vitrified to some depth. From the form and position of this little furnace it is quite evident that it must have been heated by a powerful blast.' . . . 'Remains of burnt charcoal were found in it, and on the ground near it.'[17] On the wall of the bin close by, and to the right of this furnace, was a cylindrical mass of stone, still lying in the ruins, which was probably the base of an anvil (31). Scoriae were scattered about everywhere, and in chamber Z many fragments of worked metal were turned up.

With the latter were also some twelve bronze pins, a large bronze fibula and other articles, and a button inlaid with silver (? Roman). On the sill of the doorway, near the northern end, was found a broken earthen vessel and scattered about it thirty-eight coins, comprising one silver (Caracalla), one plated silver (Severus Alexander), one washed silver (Salonina), and thirty-five

[16] *Uriconium*, 161, 162.

[17] Ibid. 159. On the same page and on p. 162 may be seen illustrations of these remains.

copper, from Gallienus to Gratian.[17a] Wright adds that there was another furnace in the south-west corner of Z, 'built of masonry and heated by a flue.' In Y were many potsherds, glass, several first brass coins, among them some of Trajan, Hadrian, and Faustina, and a stone inscribed C A A M (see inscriptions).

South of the shops and latrines we observe firstly a passage LL 15 ft. wide, forming an entrance into the colonnade and courtyard from the west; secondly, a quadrangular building U; and thirdly, another passage V, the same width as, and in line with, the south corridor, and perhaps forming another entrance into it from the west. The quadrangular building U contained an open court about 40 ft. square, floored with a herring-bone pavement, laid two or three feet above the surrounding floors and having some structure in the centre of it not now distinguishable. It opened on to the west by two doorways; the one to the north was wide enough for carts, and instead of steps it had a sloped incline, and on this was found a horseshoe. The other on the south was narrower, had two well-worn steps, and doubtless served foot passengers. Around the other three sides of the court, and separated from it by a wall 2 ft. high, were eleven cells, each about 10 ft. square. The dividing walls of the four eastern cells did not extend to the corridor wall, but resembled recesses from a passage east of them. This at its north and south ends opened on to the entrances LL and V, and in the centre a door through the corridor wall gave access to the corridor. The corner space between the most southerly of these recesses and the most easterly of the cells on the south side was paved with herring-bone, and was thought to provide a means of descent to, and communication with, the cells on the south and the recessed passage on the east, but the ground here was much broken. No doorways between the courtyard and cells were observed. The only cell excavated (22) was '10 ft. deep,' and was divided by a low cross wall, on one side of which was a quantity of unburnt charcoal with some mineral coal. In another cell were some sawn and cut horns and bones, and in the court were lead and stone weights (see p. 249), two finger-rings, a handle of block tin with fragments of a vessel belonging to it; a three-legged round iron box, lined with wood and containing metal implements; parts of two capitals—one a Corinthian which Mr. Fox assigned to the Basilica (fig. 22); dogs' skulls and also apparently human remains.

The purpose of this building is not known. Mr. Fox considered it to be a storehouse for fuel for the use of the baths. Wright explained it as a market-place with shops round it. A somewhat similarly shaped building occurs in the north-east corner of the Forum of Pompeii, as a market, but its shops or cells are all open either to the market or to a street outside. We cannot hope to assign a similar use to the building at Wroxeter, at least until it has been further excavated.[18]

[17a] Wright's list is: 1 Caracalla, 1 Severus Alexander, 1 Maximus (? Maximinus Thrax) second brass, 2 Gallienus, 1 Salonina, 1 Postumus, 8 Victorinus, 3 Tetricus, 2 Claudius II, 1 Carausius, 12 Constantinian, 1 Valentinian, 1 Gratian, 1 minim, 2 illegible (*Uriconium*, 69). In *Brit. Arch. Assoc. Journ.* xvi, 162, however, he gives the total number as 'about sixty.'

[18] Report of the excavations by Dr. Johnson and Wright in *Arch. Cambrensis* (1859), 207, 257. Wright in *Gent. Mag.* 1859, i, 447; ii, 219; 1867, ii, 514; *Brit. Arch. Assoc. Journ.* xv, 205; xvi, 158, 205; *Intellectual Observer*, iii, 16; *Arch. Cambrensis* (1867), 157; *Guide to Wroxeter* (1859); *Uriconium* (1872); Scarth, *Arch. Journ.* xvi, 53, 264; xvii, 240; xxi, 130; Maw, *Brit. Arch. Assoc. Journ.* xvii, 106, for pavements. From these Watkin, *Shrops. Arch. Journ.* 1879, ii, 330; Anderson, *Uriconium*, Fox, *Arch. Journ.* liv. Many other brief notices of the excavations in archaeological periodicals and journals for the years 1859–67 are not worth recording.

### (iii) OTHER BUILDINGS INSIDE THE WALLS

1. In 1788 some bath buildings were excavated to the west of the road that runs from north to south through the centre of the area. According to a plan made at the time by the engineer Telford (fig. 15), they measured about 70 ft. from north to south, and about 50 ft. from east to west, and contained a variety of apartments. The south-westerly room (2),[19] 19 by 12 ft. as far as traced, was a hypocaust with round pillars of sandstone grit, all of them drums of columns from some older building, except those at the south end, which were of tile ; those in the eastern corner were only 19 in. high, and supported a small bath (C). This had a step in its west and north sides ; its southern side, like that of the whole room, was destroyed ; its eastern wall was jacketed with flue tiles, and all its walls were plastered with fine *opus signinum*, while a leaden water pipe in a stone channel ran out southwards (*d*). Ash-holes pierced the west wall of room (2) and a hot air-passage ran southwards at *e*. Adjoining room (2) on the east was room (1), of the same length, but only 10 ft. wide, paved with tiles which measured 12 by 16 in., and were laid on a foundation of cement over rubble. At its north end, separated by a dwarf wall, was another bath (*a*), twice the size of (*c*) ; two steps led into it ; its walls were plastered with *opus signinum*, and its floor paved with tiles, while a drain pierced its north wall at *b*, leading into the adjoining hypocaust—probably the result of reconstruction. The four or six rooms (3 and 4) north of these are more puzzling. They show clear signs of rebuilding, but their history is obscure. Mr. Fox considered them to have originally formed one large room heated by a channelled hypocaust forming a cross in the centre and a passage most of the way round the edges, with a stoke-hole at *h*. This, he thinks, was divided later into three rooms, by cross walls at *i i*, and by a partition wall at *l l*, and one of the new rooms thus formed (that at the western end (4)), was heated by a pillared hypocaust placed at a lower level, with a new stoke-hole in the east wall at *k*. However, it seems certain that the hypocaust walls, those of (4), at any rate, were built over an earlier pillared hypocaust (1).[20] Plaster, painted yellow with red stripes and 'decussated chequers,' red and blue, was found near the east wall. The floors of the two rooms at the east end, both designated by (3) in the plan, were paved with coarse red brick tesserae, the floor to the north being 9 in. higher than the other. West of this room was another (6), measuring 9½ by 14 ft., similarly paved. North of it was a large space (7), 14 ft. wide, unexcavated at its eastern end, with a floor 'formed by a thin layer of mortar, upon a thick layer of pounded brick.' East of rooms (1) and (4) lay a corridor (5), 7 ft. wide. In it, adjoining the wall of (1), was 'a place 4 ft. deep below the level of the floor; it has a paved bottom and is formed by large granite stones on the southern and western sides, and on the north by a large thin red stone set on edge' at *n*. At *m* was a mass of masonry 7 ft. wide, thought by Mr. Fox to be 'possibly the support of a water tank used for supplying the baths.' More walls extended on the

[19] Leighton, Telford and Fox, the chief writers on this building, unfortunately use quite different letters to distinguish the various rooms ; those of Fox are here adopted.

[20] Fox, *Arch. Journ.* liv, 134 top. He has clearly mistaken the recorded facts.

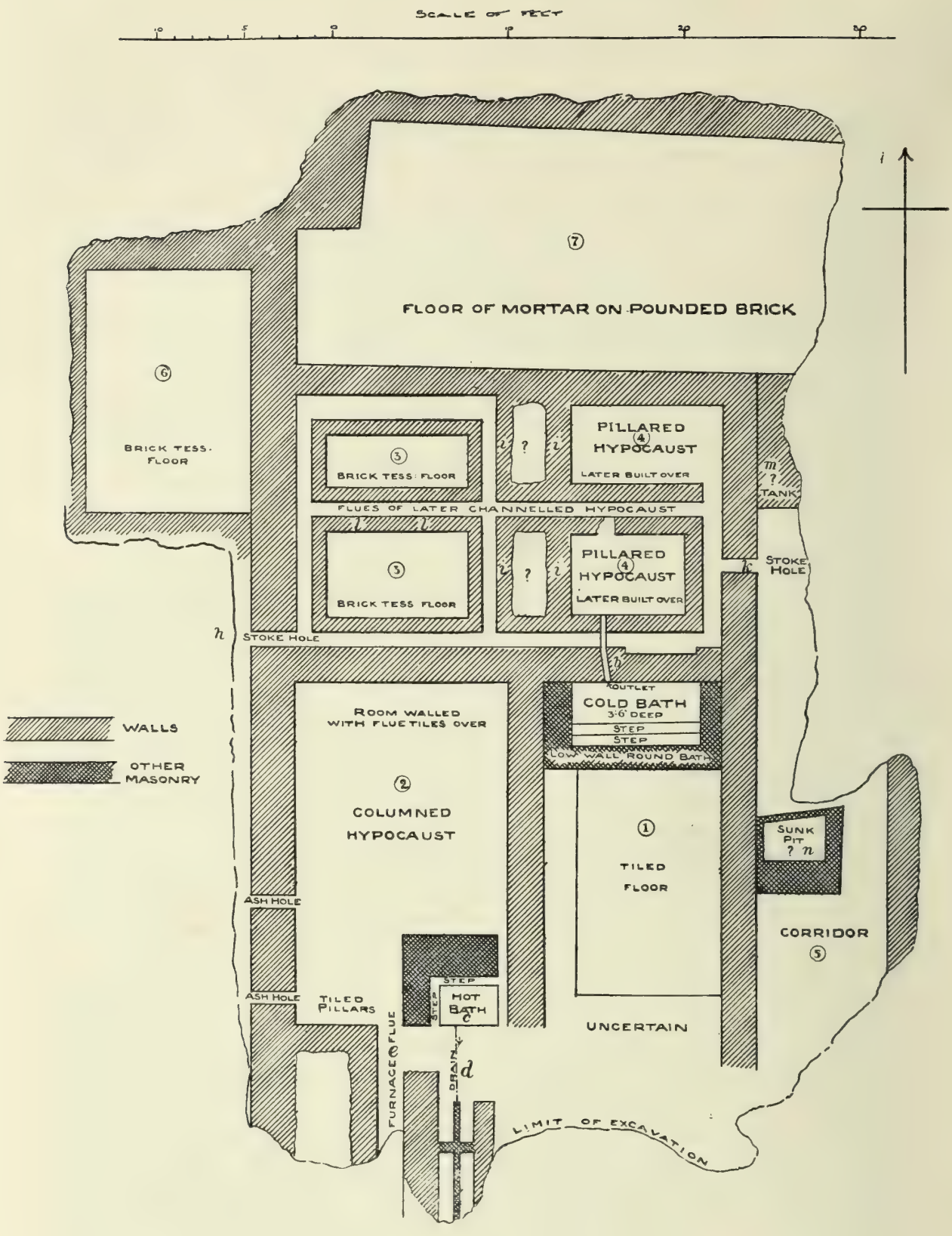


FIG. 15.—BUILDING FOUND IN 1788 (p. 235)

*(Adapted from Telford)*

south sides, and probably also on the other sides of these rooms, but no further excavation was undertaken. The walls generally were 2 or 2½ ft. thick, and appear to have consisted of red sandstone. Among the small objects found here were many coins of the 'upper and lower Empire,' a tile 2 ft. square, pierced with holes wider on one side and smaller on the other, found in room (4), possibly a 'grating' of a waste pipe ; potsherds 'of all kinds, including Upchurch,' fragments of glass and animals' bones, much charcoal—distributed in such a way as to suggest that the building perished in a conflagration—and ashes in the flues.[21] The whole evidently belonged to baths, but whether public or private cannot certainly be said.

2. In 1855 remains of a building were found in digging the foundations of a house just north of (1) and exactly opposite the northern end of the basilica. They are best described by Mr. Fox :—

> A row of four bases of piers averaging 1 foot 9 inches square by 1 foot 8 inches high, and equally spaced at 12 feet from each other, was uncovered. These piers stood in a line from north to south, and at the southern end of the line a fifth base lay out of position with the rest, together with another stone. Behind this line of bases at about 80 feet to the west, at a depth of 6 feet, lay fragments of a paving of flagstones ; and a concrete floor 5 feet below ground extended along the south side of these remains. Large stones, iron cramps, and lead were scattered about in different directions, evidently materials of a ruined structure.
>
> Each base had a chase cut through its mouldings on either side, with the exception of the fifth. In this the chase was only on the north side, while the mouldings through which it was cut died away on the opposite side in a chamfered plinth, the large stone found near it being presumably a continuation of this plinth. The bases rested, in all probability, on a continuous stone foundation, a portion of which, 3 feet square, remained under one of them. When found, the four in place were each capped by a square stone, with the upper part boldly chamfered, which stones were evidently so placed at some comparatively modern period when the bases may have been utilised as they stood for farming purposes.[22]
>
> The whole of these stones were taken up and deposited in the garden of the late Mr. Stanier's house,[23] where they are still to be seen, with the exception of two, used as bases to the Roman columns forming the piers of the churchyard gate erected in 1859.

The small finds included many stones, a gold and a silver coin, irons, 'straps' or clamps, iron 'bars' showing the action of great heat, lead, broken urns found on the concrete floor, bones, oyster shells, and other objects.[24]

3. Some buildings were uncovered in 1701 in ploughing on the highest point within the walls, about 200 yards north of the 'Old Wall.' The published plan shows 'near the foundation, a little Door place which when cleansed, gave Entrance into the vacancy of a square Room, walled about and floor'd under and over, with some Ashes and Earth therein.' The floor was tiled on a cement foundation, and beneath it was a pillared hypocaust ; the room itself measured about 9½ by 13½ ft., and its walls stood nearly 7 ft. high, and were lined with flue tiles. Evidently it was a bathroom. Further

[21] Leighton, *Arch.* ix, 323, with plan by Telford. Leighton's text with an 'isometrical view' by Telford occurs also in Telford's *Autobiography* (ed. Rickman, 1838), 23, 28, plate 3 ; hence Hartshorne, *Salopia Antiqua*, 123–5 ; Wright, *Brit. Arch. Assoc. Journ.* xvi, 210 ; *Uriconium*, 102 ; Scarth, *Arch. Journ.* xvi, 61, confusing the account with that of the remains found in 1706 ; hence Watkin, *Shrops. Arch. Journ.* 1879, p. 328 ; Anderson, *Uriconium*, 14. Fox (*Arch. Journ.* liv), attempts a reconstruction.

[22] See a plan of these remains ; *Brit. Arch. Assoc. Journ.* xvi, 205, pl. 18.

[23] The house marked as 'The Cottage' in the 25-in. O.S. Map, now the residence of Mr. Everall.

[24] Wright. *Brit. Arch. Assoc. Journ.* xvi, 205 ; *Uriconium*, 180 ; Scarth, *Arch. Journ.* xvi, 61, 68 ; hence Watkin, *Shrops. Arch. Journ.* 1879, p. 329 ; and Fox, *Arch. Journ.* liv.

east were 'Bottoms of old Walls, buried in their own Rubbish, (being such as are often found in those fields).' With these we may perhaps connect the tessellated pavements mentioned to Wright as existing close to the surface in the same field; and a little west of the place (F) beneath the smithy at the corner of two roads, buildings were said to have been found, and a large capital formed the table for the smith's anvil. The latter may belong to the basilica, and the structure beneath the smithy may be the well described by Blakeway (see below).[25]

4. A fragment of tessellated floor, of some pretensions, was found in 1827, just north of the church. It was immediately destroyed, but a drawing was first made of it, which shows an oblong pavement with a geometrical design in red, grey-green, and purple on a white ground, the whole inclosed in a plain grey-green setting. A description given by a writer in the *Gent. Mag.* differs in some details. In particular it states the size as 15 ft. square, but the plan may be in this point preferred. Buildings found under the vicarage lawn may perhaps be connected with this.[26]

5 and 6. Dukes figures two other pavements found somewhere in Wroxeter; a square one with a geometrical design and a cable pattern in red, blue, and white, found in 1706 (fig. 16); a second and larger one, in blue, green, red, and white, rectangular in shape except for an apse at one end, was found in 1734.[27]

7. Traces of buildings were found in 1860 all along the south side of the street that bounds the central block of buildings on the south. In particular, four or five small rooms were uncovered at the west end (fig. 11). West of them was a stone gutter (k), thought by Wright to be a street gutter, provided with stepping-stones. Possibly, however, it was a drain belonging to this house, since neither a street nor the west wall of the house is recorded as having been found: and the 'gutter' itself may have been closed in on the top by the stones (which were thought by Wright to be stepping-stones). With these buildings we may perhaps connect débris of destroyed buildings found in 1901 in laying a drain from the south-west corner of the bath south-east, to a point outside the town wall. With the débris were red tiles, potsherds, including one bit of Samian and some Upchurch, and animal bones. Other walls were found at intervals further south-east, and they prove that here at least, within the town, the ground was covered with buildings.[28]

[25] Harwood, *Philos. Trans.* (1706), xxv, 2226, pl. i; hence Wright, *Brit. Arch. Assoc. Journ.* xvi, 212, 213, and *Uriconium*, 105, 106; Hartshorne, *Salopia Antiqua* (1881), 117, Dukes, MS. Hist. of Uriconium; Scarth, *Arch. Journ.* xvi, 61, confuses this with the remains found in 1788; Watkin, *Shrops. Arch. Journ.* 1879, p. 328; Anderson, *Uriconium*, 13; Fox, *Arch. Journ.* liv. A model of this hypocaust is in Shrewsbury Museum.

[26] Drawing in Dukes, MS. Hist. of Uriconium, 70, reproduced by Fox, *Arch. Journ.* liv. Account in *Gent. Mag.* 1828, i, 255; hence Wright, *Brit. Arch. Assoc. Journ.* xvi, 209; *Uriconium*, 102, 198; Scarth, *Arch. Journ.* xvi, 61; Watkin, *Shrops. Arch. Journ.* 1879, p. 328.

[27] MS. Hist. of Uriconium, 67, 69: that found in 1706 is also mentioned in a letter from Samuel Garbet to William Mytton, written 14 Dec. 1733 (Brit. Mus. Add. MSS. 30315, fol. 17) in which he says that he saw, about thirty years before in Wroxeter fields, a Roman chequered pavement of cubical stones in three different colours, red, blue, and white, set in strong cement and formed in several figures. From Dukes, Anderson, *Uriconium*, 13; Scarth, *Arch. Journ.* xvi, 61; Watkin, *Shrops. Arch. Journ.* 1879, p. 328, with a bad engraving of Dukes' drawing; Fox, *Arch. Journ.* liv; Hartshorne, *Salopia Antiqua*, 127, mentions two small tessellated pavements found in 1810, perhaps meaning these.

[28] Wright, *Brit. Arch. Assoc. Journ.* xvi, 160, 162, and *Uriconium*, 179, 184; Scarth, *Arch. Journ.* xvii, 243; *Shrops. Arch. Journ.* 1903, p. 163, with plan showing positions of walls.

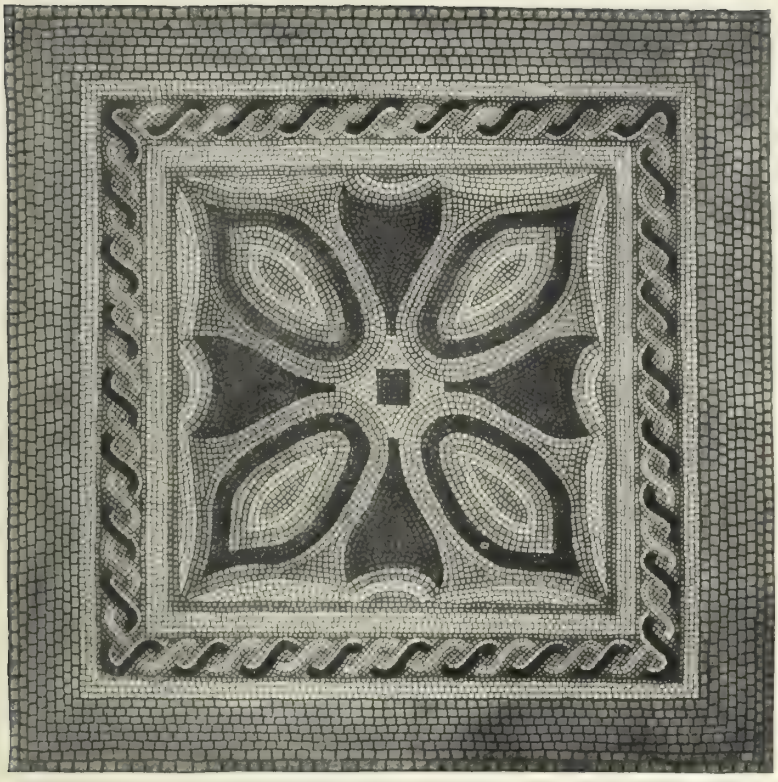

FIG. 16.—MOSAIC, FOUND IN 1706

Coloured red (black in the plate), blue (shaded), and white (light), with a greenish-blue border

(*Photograph from Dukes MS.*)

FIG. 17.—TWO SEPULCHRAL STONES FROM WROXETER

(Nos. 6, 7)

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With these we may mention a well found in the upper part of the field on the opposite side of the road to the church : the shaft was circular, 2½ ft. in diameter, about 14 ft. deep, and was built of small tiles. On the surface was a small platform about 6½ ft. square, made of large roughly cut flagstones about 4 in. thick, with a hole in the centre. Another was thought to have been found south-east of the central block of buildings,[29] and a third, about 50 ft. deep, with an accumulation of potsherds and bones above it, is recorded by Blakeway as occurring in the field near the smithy.[30] Lead pipes were said to have been found in the same field, and others east of the baths.[31]

### (iv) CEMETERIES

Burials have been found at various places outside Wroxeter. The most numerous and richly furnished lined the road running out east, now called Watling Street. Others have come to light near the north road at Norton, and one or two on the west at Tern Bridge ; while some, unfortunately in part of doubtful date and place, have been detected near the probable site of the south gate, and others are still less satisfactorily recorded.

1. The eastern cemetery, as far as is known at present, begins about 250 yds. east of the site of the east gate, and reaches eastwards for about 150 yds. along the northern slope and top of a bank south of Watling Street. It has been thought to have also extended along the other side of the street; Wright records that 'burial urns were frequently found in the lower ground on the north side of the road.' But when trenches were made there about 1861, no burials of any kind appeared.[32] It should be here remarked that the original Roman road apparently ran further south than the modern lane called Watling Street, and its traces suggest that the cemetery, which lies wholly south of Watling Street, lay on both sides of this Roman street. South of the modern road the slope above mentioned has yielded tombs and inscribed stones which prove that the cemetery was used from the earliest occupation of Wroxeter as a Roman site, when it was probably a military centre in the middle of the first century A.D. In 1752, some inscriptions recording the soldiers of the Fourteenth and Twentieth Legions were found with urns containing ashes, and are described in detail below (sec. on inscriptions). In 1810 several earthen urns and a glass vessel with two handles, 14 in. in diameter, containing very small bones, and apparently also silver coins, were dug up near the Horse Shoe Lane in a field called Middle Crows Green, and were thought to belong to the same cemetery as the inscribed stones.[33] In 1861 and 1862 extensive, but unscientific, excavation was undertaken at this spot. This revealed another inscribed and sculptured tombstone (no. 1), of a soldier of the Fourteenth Legion more or less in situ and, about 60 ft. west of it, part of a small rectangular building, about

[29] Wright, *Uriconium*, 219, where there is a drawing of the well.
[30] Blakeway MSS. in Bodl. Lib. No. 25, fol. 9, 14.
[31] Wright, *Brit. Arch. Assoc. Journ.* xvi, 210 ; *Uriconium*, 218.
[32] *Brit. Arch. Assoc. Journ.* xvi, 287 ; *Intell. Observer*, iii, 35.
[33] Ward, *Philos. Trans.* 1755, xlix, 196 ; Hartshorne, *Salopia Antiqua*, 129 ; Dukes, MS. Hist. of Uriconium (Soc. Antiq. Lib.), 46. The field in which the burials were found in 1861 is marked Middle Crows Green on the Ordnance maps.

60 ft. long from east to west and 25 ft. wide with walls 18 in. thick (fig. 18). A second and similar building was found near in 1862, but it had neither floor nor any trace of burial. Besides these tombs, there was a large number of urns, placed in small holes, about 4 ft. deep, in rows almost parallel to the road; they contained burnt bones and melted glass lachrymatories, and with them were earthern vessels of all varieties and a few glass and some metal objects. Small deposits of wood ashes lay scattered in various places, and were thought to indicate the pyres. At one spot a square pit had been dug and the body burnt in it, and the remains of burnt timber and molten glass still remained when it was opened. No example of burial by inhumation occurred here.

The small objects found in the cemetery include about thirty urns of all

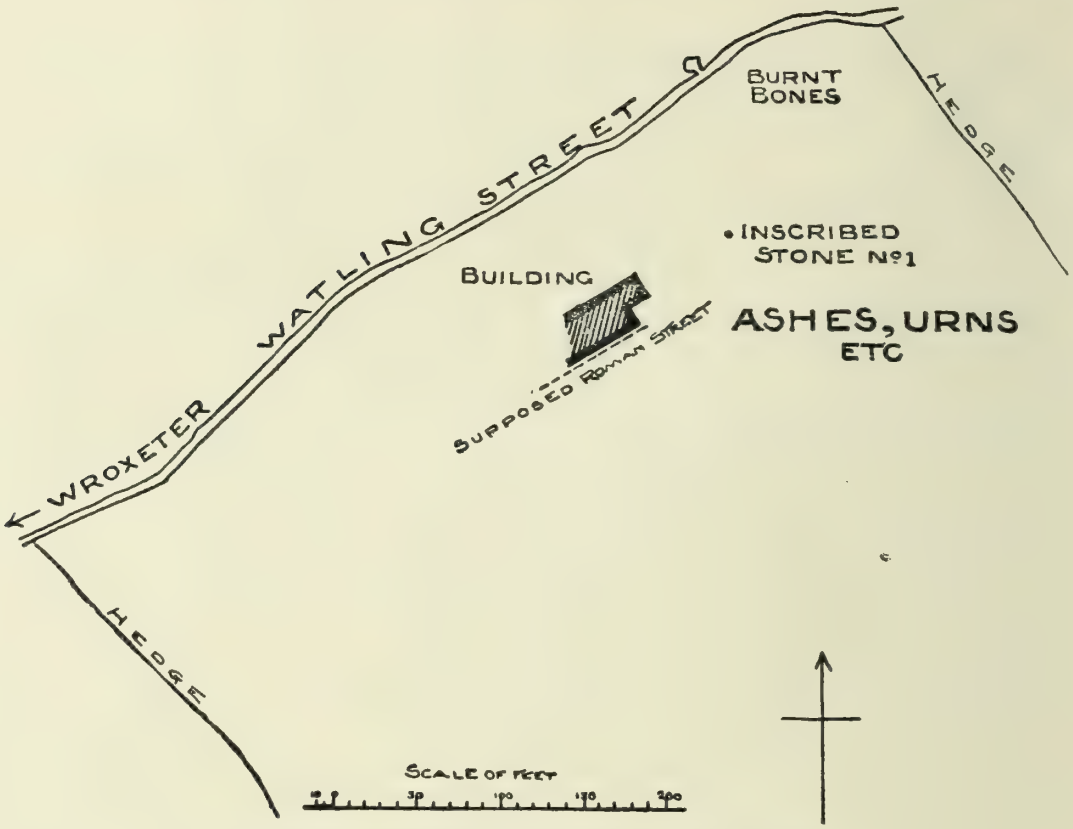



Fig. 18.—Eastern Cemetery, Excavated 1861 and 1862

(Adapted from *Gent. Mag.* 1862)

kinds and sizes, the largest about 24 in. in diameter and 18 in. high, some Samian bowls and saucers, several lamps—one stamped MODES, another with the head of Hercules, a third with a dolphin and a fourth with a kneeling figure on it—various glass vessels (fig. 32), large and small (one pillar-moulded, $5\frac{1}{2}$ in. in diameter, fig. 32), a bronze mirror, 4 in. in diameter, and fragments of another, a silver buckle and two coins, one assigned to Commodus and the other apparently a 'second brass' of Claudius.

One curious bronze object was thought to be a lancet. It had a narrow oval loop handle, a circular guard and a short triangular steel blade: it was in a wooden case lined with leather and was apparently found with a needle or bodkin, some glass beads, two very small earthen vessels, containing

a hard white substance, in a wooden box of which the copper lock remained.[34]

2. A second cemetery was met with in a cottage garden at Norton, about 120 yards north of the line of the north wall. Its extent was not ascertained, but there were 'considerable traces of sepulchral interment.' In particular we have record of a pit, 6 ft. square and 3 ft. below the present surface, similar to that of the eastern cemetery, but lined with clay 12–16 in. thick, baked hard by the action of heat. It contained a very large urn, full of bones, which was placed on two flat tiles cemented together: a 'second brass' of Trajan lay imbedded in the cement—and the whole was surrounded with clay. A coin of Hadrian was also found in this cemetery.[35]

3. To the west of Wroxeter an interesting grave was opened in 1798 at Berwick (now called Attingham) in excavation for a piece of water, probably that about 500 yards south-west of Attingham and about a mile west of the north wall of the town. It is described as follows:—

> Between Tern Bridge and the Severn, at Attingham, in a ploughed field, at a little more than plough depth, an enclosure of large stones was come upon, within which were ranged three large glass urns, of very elegant workmanship, one large earthen urn, and two small ones, of fine red earth. Each of the urns had one handle, and the handles of the glass urns were elegantly ribbed. The glass urns were 12 in. high, by ten in diameter. The large earthen urn was so much broken that the size could not be ascertained; on the handle were the letters SPAH. The small urns were about nine inches high. With the glass urns were burnt bones and fine mould, and in each a fine glass lachrymatory of the same material; these had a most beautiful light green tint. Near one of them was part of a jaw-bone, an earthen lamp, and a few Roman coins of the Lower Empire, of little value. The whole were covered with large flat stones, covered with a quantity of coarse rock-stone.[36]

4. From these definite traces of Roman cemeteries round Wroxeter we pass to some less well recorded and less certain remains. First we should notice that Scarth records two urns of unbaked clay containing ashes, as found 'in the village,' and he also mentions, as if found there, a small lead sarcophagus, containing calcined bones and an earthen jar.[37] The position of these burials, if accurately given by Scarth, was either within the city walls or just outside the south corner of them. There seems no reason to doubt the Roman character of the lead sarcophagus.

5. Bishop Gibson describes some burials noticed somewhere in Wroxeter which he supposed to be Roman. They were, he says, laid on beds of red clay in deep wide graves, and covered with the same clay, and 'fenced

[34] Johnson (the excavator) *Gent. Mag.* 1862, i, 400, with plan here reproduced; 1863, i, 595, briefly, and *Arch. Journ.* xix, 80; xx, 196; Wright, *Intell. Observer*, i, 35 with another plan and woodcuts of objects, *Reliq.* iii (1862), 12, with a woodcut of lancet, and 171, *Uriconium*, 339 and 165, 269 for lancet, 258, 263, for pottery and glass. Hence Scarth, *Gent. Mag.* 1863, ii, 305, wrongly stating that the coins of Hadrian and Trajan from the cemetery at Norton were found here, and *Arch. Journ.* xxi, 133, Anderson, *Uriconium*, 67, 116, pl. x, xi. A brief mention in *Gent. Mag.* 1862, ii, 677. Most of the objects are in the Shrewsbury Museum. As usual in English excavations, the work was carried out in a slovenly manner, and no care taken to keep the contents of the various burials distinct.

[35] Johnson, *Arch. Journ.* xix, 80; Wright, *Intell. Observer*, i (1867), 35, 40, 45; *Uriconium*, 342, 347, 354.

[36] Parkes in B.M. Add. MS. No. 21011, fol. 37, 38; *Gent. Mag.* 1798, i, 162; hence Scarth, *Arch. Journ.* xvii, 246; Wright, *Uriconium*, 35 n.; and Anderson, *Uriconium*, 14.

[37] *Arch. Journ.* xvi, 62; Wright also mentions a leaden vessel, apparently the same, as brought from Wroxeter 'many years ago,' *Guide*, 72, and again, but rather vaguely in *Uriconium*, 350. Hence Anderson, *Uriconium*, 121; but he implies carelessly that it came from the eastern cemetery. It is now in Shrewsbury Museum.

with thin slates,' above which were 'great stones sometimes five or six upon a grave.' He also records urns deposited in red sand, three or four feet below the surface, and apparently distinct from the graves.[38]

6. Gough records several skulls found in hollows towards the Severn, and in 1859 about twenty skulls and remains of skeletons[39] were dug up in an orchard in a corner of a field overlooking the river and north of the lane leading to it, opposite the church and close to the village, marked C on map. They had been buried in order: no objects were found with them, except some potsherds (? date), an iron ring, a few iron Roman nails and a coin of Claudius Gothicus. The most remarkable fact about them is that at least eleven of the skulls were deformed; in each case the face was oblique, one eye protruding beyond the other. This strange distortion was attested by sketches made at the time, and ascribed by Johnson to acids in the soil, which rendered the skulls soft and liable to such change from the pressure of the superincumbent earth.[40]

From this account it cannot be inferred that the burials are definitely Roman. There is no feature either conclusively Roman or un-Roman. The presence of the coins and nails suggest, however, a Roman origin, at least for some of them, and these, with the urns recorded by Scarth and Bishop Gibson, may have belonged to a cemetery on the south side of the town. If they are Roman, they belonged to a period when Viroconium had reached its fullest limits and was walled, for inhumation burials are mostly late. It suggests that a wider space intervened between the river and the south-west corner of the wall—which has not yet been clearly traced—than has sometimes been supposed. But the exact site of the urns mentioned above is uncertain, the Roman finds are few and the burials many, and they may have, at some period, formed part of the churchyard on the opposite side of the road. Until more conclusive Roman features are forthcoming, they must be considered doubtful. But it is obvious that the cemeteries in the neighbourhood of Viroconium must have been either more extensive or more numerous than we at present know.

### (v) THE ROMAN INSCRIPTIONS OF WROXETER

The Roman inscriptions hitherto discovered at Wroxeter are few—seven tombstones, of which two are mere fragments, six other inscribed stones which are either very brief or very broken, and a tiny handful of smaller objects, such as an oculist's medicine-stamp, an inscribed gem and three weights. Proper excavation of the town and its cemeteries would undoubtedly multiply this small total many times over. Meanwhile, we have to observe that, if the existing discoveries are few, they are also valuable. In particular, two of the tombstones—those of soldiers in the

[38] Camden, *Brit.* (ed. Gibson, 1722), i, col. 652; Lloyd's MSS. (beginning of eighteenth century), quoted by Hartshorne, *Salopia Antiqua* (1841), 129; Dukes in his edition of Lloyd's *Antiq. of Shropshire* (1844), 149. Lloyd & Gibson practically give the same account. From Gibson, Cox, *Magna Britannia* (1727), 640, and Camden, *Brit.* (ed. Gough, 1789), ii, 413. From one of these Scarth, *Arch. Journ.* xvi, 62. Parkes also in *Gent. Mag.* 1813, i, 9 mentions several urns discovered at Wroxeter three or four feet below the surface, perhaps quoting the above.

[39] Camden, *Brit.* (ed. Gough, 1789), ii, 413.

[40] Johnson in Wright, *Guide to Uriconium* (1859), 84, with plate, and Wright, op. cit. p. 74, also *Brit. Arch. Assoc. Journ.* xvi, 210 and map; Johnson, *Royal Soc. Proc.* xii (1862), 149; *Intell. Observer*, ii (1863), 309; hence Scarth, *Arch. Journ.* xvi, 273; Anderson, *Uriconium*, 130.

Legion XIV Gemina—are among the earliest Roman lapidary monuments in this country, and throw fresh light on the history both of the Roman conquest of Britain and of the Roman occupation of Wroxeter. They provide part of the scanty evidence which goes to show that the army of Claudius conquered Britain in three *corps*, the left wing (Legion II Augusta) acting south of the Thames, the centre (Legions XIV and XX Valeria Victrix) crossing the Midlands to Wroxeter and Chester, the right wing (Legion IX Hispana) moving through the eastern counties to Lincoln and the Humber. They also prove that the earliest Roman occupation of the site of Wroxeter was military. We can be fairly sure, with these stones before us, that the Fourteenth Legion, with or without the Twentieth, once had its encampment here. We cannot indeed trace the outlines of its ramparts or determine the length of its stay, but skilful excavation may one day help us to discover the former, and for the latter we have already some evidence. The occupation was certainly short. It ceased before, and possibly long before, the end of Nero's reign, and the guardianship of the land facing the North Welsh hills was entrusted to Chester. Wroxeter itself became a peaceful country town, capital of the Cornovii and home of civilized life in the district. Whether it owed this development to any seed sown by the army we cannot now determine. Its title, Viroconium Cornoviorum, given by the Ravenna geographer, suggests that in some form it existed as a tribal centre before the Roman conquest.

The inscriptions of Wroxeter have been often edited—more often perhaps than those of any other Romano-British site. Besides notices of individual stones, we have collected accounts by Parkes, Dukes, C. H. Hartshorne, Wright, Scarth, Anderson, Hübner, and Watkin. It cannot be said that they have benefited much by this frequent treatment. None of the writers named, except Hübner, was a competent epigraphist, and Hübner, in his edition of the Wroxeter inscriptions, appears to little advantage. He did not see the monuments themselves, his readings are not always correct, while his notes contain numerous misreferences and fail to bring out the interest of the legionary epitaphs. For the present edition the stones have been re-examined, so far as their inconvenient and ill-lighted positions in Shrewsbury Museum permit, and it is hoped that the literature has been cited with reasonable fulness and accuracy. Only unimportant references have been omitted such as those to the various editions of Wright's *Celt, Roman, and Saxon*. Wright repeated himself so often in so many different publications that it is idle to cite them all, and works like the *Celt, Roman, and Saxon* are mere summaries of matter given more fully and with more authority elsewhere. The Parkes and Dukes MSS., to which occasional reference is made, are volumes of drawings by local antiquaries, some made by a Mr. Parkes about 1810–30, and now in the British Museum (Add. MS. 21011 foll. and 21180), the others made by a Mr. Thos. F. Dukes about 1828 and now in the library of the Society of Antiquaries.

In the following account, square brackets indicate that letters are supplied which are no longer legible on the object, but are thought once to have been, while round brackets indicate expansions of abbreviations. Where nothing else is said, the inscriptions have been examined by myself, and the reading is that which I saw on the stone.

1. Large monument, 24 in. wide and now 28 in. high, much broken. Above the inscription was originally the figure in relief of a soldier erect: now only the sandalled feet survive. Found September, 1861, lying face downwards at or near its original position in the Roman cemetery outside the East Gate, 70 ft. south from the hedge of the present Watling Street, 60 ft. west of a building, and on the line of a supposed Roman street. The inscription consists of an ordinary epitaph in three lines, and a metrical addition of three hexameters now hardly legible (fig. 19).

[T FL]AMINIVS T · POL(LIA) FA[V?—AN]NORVM XXXXV, STIP(ENDIORVM) XXII, MIL(ES) LEG(IONIS) [XII]II GEM(INAE). MILITAVI A(T)Q(VE) NVNC HI[C] S[VM].
[PER]LEGITE ET FELICES VITA PLVS [M]IN[VS IVTA?
[OMNIB(VS)] A[E]QVA [LEGE ITER EST AD TAENAR]A DITIS:
VIVITE, DVM S[TYGIVS] VITAE DAT TEMPVS, HONEST[E.

Titus Flaminius, son of Titus, of the Pollian tribe, born at Faventia, died at the age of 45, after 22 years' service, soldier in the Legio XIV Gemina. I have fought (i.e. I have finished fighting) and now I am here.

The inscription belongs to the earliest years of the Roman conquest, as the mention of the Legio XIV Gemina and some other details show. This Legion came to Britain in 43, and was withdrawn towards the end of Nero's reign (68–70 A.D.). Moreover, it obtained the title Martia Victrix about 60 A.D. in commemoration of its services against Boadicea, and the absence of these epithets on our epitaph may argue a date earlier than that event. Further, FA at the end of line 1 seems to denote the dead man's birthplace, and it would appear that he bore no cognomen. This absence of a cognomen is a feature which rarely occurs after the time of Claudius. We may then place this stone before the end of that emperor's reign.

The reading is disputed in many points. In line 1, T · POL · FA (not POLLIA) seems certain; the more usual F, for *filius*, has been omitted, no doubt intentionally, after *T(iti)*, as on many military inscriptions of early date. After FA the stone is broken and the fracture gives room for one, or at the most two, more letters. The three (or four) letters FA. . may have denoted the man's birthplace in abbreviation. Indeed, they can hardly have denoted anything else, since *cognomina* are not usually shortened in this fashion. Of the towns assigned to the Pollian tribe only two begin with FA—Fanum Fortunae and Faventia, both in northern Italy. The former name is too long to be conjectured here, in whatever kind of abbreviation. The latter might well have been abbreviated FAV, as Vicetia in No. 2 is abbreviated VIC, and I accordingly venture to restore FAV here. In line 2 XXXXV is certain, instead of the XXXV printed by Hübner and others. In line 3 the stone has AQ, which must represent *atque*, rather than *aquilifer* as Mr. McCaul suggested: Hübner's conjecture of ĀQ is wrong. The reading of the three hexameters which follow is so obscure that I can only give the supplement proposed by McCaul, and insert in square brackets the letters which are not visible to me on the stone. I must add, however, that the faint traces visible to me do not confirm *omnib(us) aequa lege:* I seemed to see on the stone . . MINESTAQVAPEGI . . in which M, S and P are doubtful.

Published by Botfield, *Proc. Soc. Antiq. Lond.* (2nd Ser.) ii (1861), 16; Johnson, *Gent. Mag.* 1862, i, 401, with plate; Scarth, *Arch. Journ.* xxi (1864), 131; McCaul, *Britanno-Roman Inscr.* (1863), 172; Anderson, *Uriconium*, 122, with woodcut; Wright, *Uriconium*, 361; hence Hübner, *Corp. Inscr. Lat.* vii, 154, and Watkin, *Shrops. Arch. Soc.* ii, 333–6, with plate; seen by myself. Brief mentions also in *Brit. Arch. Assoc. Journ.* 1861, p. 329; *Gent. Mag.* 1862, i, 44 and 1863 ii, 305, and *Arch. Journ.* xix, 80.

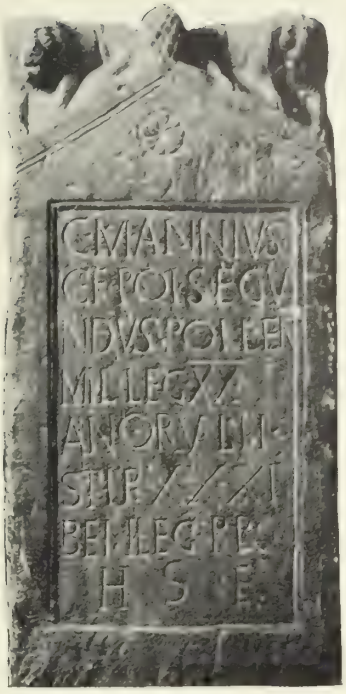
2. Tombstone, 22 in. wide, 84 in. high when found, with letters 2–3 in. high, surmounted with a pediment containing floral ornament. Found in 1752, with Nos. 3 and 6, 'in a field nearly a mile from Wroxeter village, about 200 yards from the foundation of the old walls on the north-east towards Watling Street'—that is, in the Roman cemetery outside the East Gate. A base on which it originally stood was found near it and also broken potsherds and burnt ashes, probably the ashes of the dead man. Preserved for a while in Wroxeter Church, now in Shrewsbury Museum (fig. 19).

M. PETRONIVS L(VCI) F(ILIVS) MEN(ENIA TRIBV) VIC(ETIA): ANN(ORVM) XXXVIII, MIL(ES) LEG(IONIS) XIIII GEM(INAE). MILITAVIT ANN(OS) XVIII, SIGN(IFER) FVIT. H(IC) S(ITVS) E(ST).

To M. Petronius, son of Lucius, of the Menenian tribe, born at Vicetia (Vicenza, in northern Italy), aged 38, soldier in the Legio XIV Gemina. He served 18 years and was standardbearer (i.e. he had reached this grade at his death). He lies here.

The stone belongs to the earliest years of the Roman occupation. The absence of cognomen refers it in all probability to the reign of Claudius; the mention of the Fourteenth Legion, the use

No. 1



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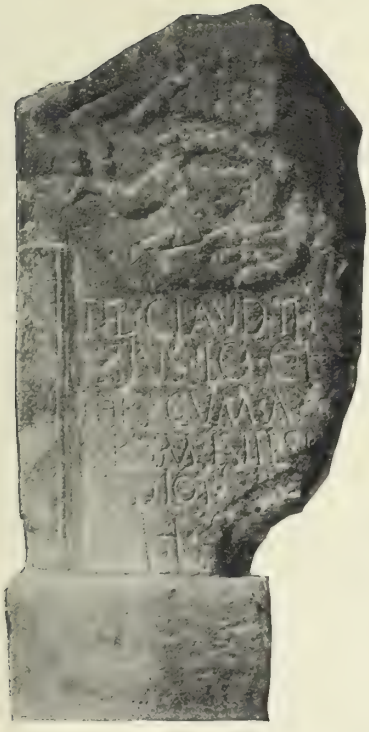

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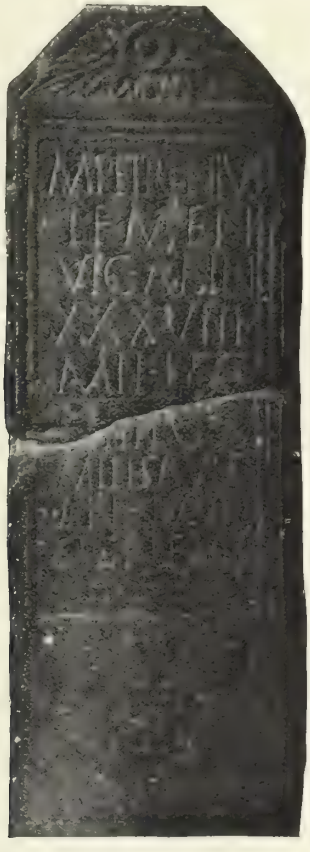

No. 2

FIG. 19.—ROMAN MILITARY TOMBSTONES FROM WROXETER

(*From photographs*)

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of the formula HSE, and the decoration of the pediment, also suit an early date. VIC might also be explained *vic(sit)*, for *vixit*, 'he lived.' But Vicetia belonged to the Menenian tribe, and therefore the interpretation given above and first suggested by Mommsen, is much the more probable.

Published first by Ward, *Philos. Trans.* xlix (1755), 196, with plate: hence Gough, *Adds. to Camden* (1806), iii, 23, plate i, fig. 4; Newton, p. 112, 54*a*; Parkes MS. B.M. Add.; Hartshorne, *Salopia*, 120 (measurements different) and Dukes, MS. Uriconium and *Glouc. Brit. Arch. Assoc. Cong.* 1846, p. 71, plate; Scarth, *Arch. Journ.* xvi, 63 (briefly); Wright, *Brit. Arch. Assoc. Journ.* xv, 312, plate, *Guide*, 70, and *Uriconium*, 357; McCaul, *Brit.-Rom. Inscr.* 171; Anderson, *Uriconium*, 124, 125; Hübner, *Corpus Inscr. Lat.* vii, 155; Watkin, *Shrops. Arch. Journ.* 1879, ii, 332–4. Re-examined for this work.

3. Tombstone 80 in. high when found, 27 in. wide, with letters $2\frac{7}{8}$ in. high, except the concluding HSE ($3\frac{1}{4}$ in.); ornamented at the top with a pediment containing a rose, capped by a fir-cone, and flanked on each side by a lion. Found and published with the preceding (fig. 19).

C(AIVS) MANNIVS C(AI) F(ILIVS) POL(LIA) SECVNDVS POLLEN(TIA), MIL(ES) LEG(IONIS) XX AN(N)ORV(M) LII, STIP(ENDIORVM) XXXI, BEN(EFICIARIVS) LEG(ATI) PR(OVINCIAE). H(IC) S(ITVS) E(ST).

'To the memory of Caius Mannius Secundus, son of Caius, of the Pollian tribe, born at Pollentia (in Liguria), soldier of the XXth Legion, aged 52, served 31 years, orderly of the governor of the province. He lies here.'

The Twentieth Legion was stationed at Chester during most of the imperial period. It was usually styled Valeria Victrix, and the omission of the epithets here may mark an early date—unless it be due to simple carelessness. The concluding formula HSE also indicates an early date, and as the inscription mentions a legionary recruited in Italy, we have a further reason for thinking that it is not likely to be later than (at the latest) about A.D. 90. The occurrence of a Twentieth legionary at Wroxeter may be due either to an accident, or to some campaign on the Welsh border, or the Twentieth Legion may at first have been stationed at Wroxeter. But we have no other evidence of this last supposition, and it is not necessary to explain the occurrence of this stone at Wroxeter.

The interpretation of LEG . PR. is not quite certain; I accept that suggested by Mommsen. The renderings given by English antiquaries, *legionis primae*, or *legati principalis* ('the principal legate'), and the like are unquestionably wrong, and Hübner's *ben. leg(ati), pr(inceps)*, though possible, is clumsy.

Ward, op. cit. plate v, fig. 1, hence Gough, *Adds. to Camden* (1806), iii, 23, plate 1, fig. 3; Parkes MS. B.M.; Hartshorne, *Salopia Antiqua* (1841), 121; Dukes, MS. and *Brit. Arch. Assoc. Glouc.* (1846), p. 71, plate; Scarth, *Arch. Journ.* xvi, 63; Wright, *Brit. Arch. Assoc. Journ.* xv, 311 (plate), *Guide*, 69, and *Uriconium*, 356; McCaul, *Brit.-Rom. Inscrip.* (1863), 170; Anderson, *Uriconium*, 124; hence Hübner, *Corpus Inscr. Lat.* vii, 156; and Watkin, *Shrops. Arch. Journ.* 1879, ii, 332–3; seen by myself. The text is certain. Dukes read MARINIVS in his text, but his plate is correct, and the form doubtless a mere misprint.

4. Sandstone fragment, measuring 12 in. by 15 in., with parts of three lines in good lettering; in lines 1 and 2 $3\frac{1}{4}$ in. high, line 3 $2\frac{5}{8}$ in. When first recorded in 1789 this fragment was lying 'under the wall of the last farmhouse next to the church,' that is, inside the area of the Roman town near the south gate, and it is still in the village. See fig. 20.

. . VA]LERI[VS . .] F · GA[?L(ERIA TRIBV) . .] MILES [LEGIONIS ? . . .

'To the memory of Valerius . . . son of . . . , of the Galerian tribe, soldier in the . . . '

That is, we have a piece of a tombstone. How it came to be inside the town we cannot say. But Nos. 5 and 7 supply parallels.

Published first by Gough, *Adds. to Camden* (ed. 1789), ii, 413 (ed. 1806), iii, 23; Parkes MS. fol. 71; hence Dukes, *Brit. Arch. Assoc. Glouc. Cong.* 71, with bad plate; Wright, *Brit. Arch. Assoc. Journ.* xv, 314, with the same plate, and *Guide*, 71, with bad text; Scarth, *Arch. Journ.* xvi, 65, brief mention; Hübner, *Corpus Inscr. Lat.* vii, 157, who wrongly says the stone is in Shrewsbury Museum; and Watkin, *Shrops. Arch. Journ.* 1879, ii, 335; a squeeze was sent me by Mr. G. E. Fox, F.S.A. All accounts agree with the squeeze in showing CAI or GAI at the end of line 2.

5. Part of a tombstone, 43 in. high and 26 in. wide, broken across the ends of all the lines. Above are the traces of the common tombstone relief—a horseman riding over a fallen enemy who is armed with sword and shield. Gough, writing in 1789, states that it was found later than Nos. 2, 3, and 6, and in his time was in the wall of the vicarage, that is, inside the wall close to the south gate; but he does not say where exactly it was found. Blakeway's papers in the Bodleian (iii,

359, and xxv, 8, 14) state, rather obscurely, that the stone was found in July, 1783 (unless that be the date of a sketch), near the blacksmith's shop, a little north of the Basilica, and lay for long by the roadside before being taken to the vicarage. Now in Shrewsbury Museum (fig. 19).

TIB(ERIVS) CLAVD(IVS) TIR[·]NTIVS, EQ(VES) COH(ORTIS) . . THRACVM, ANNORVM LVII STIPENDIORVM . . . H(IC) S(ITVS) E(ST)

'To the memory of Tiberius Claudius Terentius, horseman in the . . . cohort of Thracians, aged 57, service . . . years. He lies here.'

The relief of the horseman indicates a fairly early date, and so too the formula HSE, as in Nos. 2 and 3. The reading of the man's cognomen is uncertain. The stone appears to have 'Tir' (or possibly 'Ter,' as in some of the older copies) at the end of line 1, and certainly has 'ntius' in line 2. 'Terentius' occurs sometimes as a cognomen, though it is, of course, far commoner as a *nomen*; Tirintius (i.e. Tirynthius) is also a possible conjecture. The number of the cohort of Thracians in which the man served cannot be recovered. But we have an early inscription of the sixth cohort at Gloucester, while the other references to the Thracian cohorts in Britain come from the far north and from a later date. So one may perhaps supply VI after COH.

Gough, *Adds. to Camden* (ed. 1789, ii, 413; ed. 1806, iii, 23); Parkes MS.; Hartshorne, 123 (wrong measurements); Dukes, MS. (bad copy) and *Brit. Arch. Assoc. Glouc. Cong.* 72 (giving wrong place and date of find); Wright, *Brit. Arch. Assoc. Journ.* xv, 313, *Guide*, 71, and *Uriconium*, 359; Scarth, *Arch. Journ.* xvi, 64; Anderson, *Uriconium*, 127; Hübner, *Corpus Inscr. Lat.* vii, 158; Watkin, *Shrops. Arch. Journ.* 1879, ii, 234, giving a wrong date of finding; myself, *Ephemeris Epigr.*, vii, 864. Seen by myself.

FIG. 20.—INSCRIBED OBJECTS FROM WROXETER

(The numbers refer to the numbers of the inscriptions in the adjoining text)

6. Tombstone 30 in. high, 28 in. wide, divided into three panels, two of which are inscribed, while the third is blank; over the centre panel, in low relief, is a Medusa's head and snakes, with a dolphin on each side and garlands on each panel. Found with Nos. 2 and 3 (fig. 17).

1. D(IS) M(ANIBVS) PLACIDA AN(NORVM) LV, CVR(AM) AG(ENTE) CONI(VGE), A(NNORVM) XXX.

2. D(IS) M(ANIBVS) DEVCCVS, AN(NORVM) XV, CVR(AM) AG(ENTE) FRATRE.

1. 'To the memory of Placida, aged 55, inscribed by her husband, after 30 years of married life.'

2. 'To the memory of Deuccus, aged 15, inscribed by his brother.'

Presumably Placida and her unnamed husband were the parents of Deuccus and the brother who had his inscription inscribed. The third panel was doubtless originally intended for the husband, but by some accident was never filled in. As neither the woman nor the boy has a *nomen*, the inscription may date from the period when the Britons round Wroxeter were becoming

Romanized, used the Roman language, and sometimes bore Roman names, but had not yet acquired the Roman civic franchise. On the other hand the inscription bears no marks of a very early date, such as appear on the legionary tombstones found with it (Nos. 2, 3).

The reading seems certain ; McCaul's explanation of A · XXX at the end of No. 1 is the best available, and is here adopted. At the end of No. 2 the stone has FRATRE (FR tied), not PATRE or RATRE, as earlier antiquaries read. The name Deuccus appears to be Celtic. The word itself does not occur elsewhere, but the termination is decisive. One may compare such examples as Lanuccus, Uniuccus, Lituccus, Smertuccus ; the even more numerous names ending in *-ucus* or *-iccus* are probably phonetic variants.

Ward, loc. cit. plate v, fig. 2 ; hence Gough, *Adds. to Camden* (1806), iii, plate 23 ; Parkes MS. ; Hartshorne, *Salopia*, 122 ; hence Dukes, MS. and *Brit. Arch. Assoc. Glouc. Cong.* 72, plate ; Wright, *Brit. Arch. Assoc. Journ.* xv, 312, with the same plate, *Guide*, 71, and *Uriconium*, 357—all these reading RATRE ; Scarth, *Arch. Journ.* xvi, 64, reading PATRE ; McCaul, *Brit.-Rom. Inscr.* 167, PATRE ; Anderson, *Uriconium*, 127 ; Hübner, *Corp. Inscr. Lat.* vii, 160 ; Watkin, *Shrops. Arch. Journ.* 1879, ii, 334, with wrong interpretation. The idea entertained by Wright in the earlier editions of *The Celt, The Roman, and The Saxon*, that the end of No. 1 denotes *cur(ator) ag(rorum) [ter]ra(rum) Tre(bonii)* is mere nonsense, as was pointed out by McCaul and by Crowe, *Gent. Mag.* 1861 (2), 69. Seen by myself.

7. Top left hand corner of tombstone, measuring 15 in. high and wide, found in 1859 in the excavations which uncovered the baths and basilica ; according to the excavators it bore marks of having been used up as building material. Now in Shrewsbury Museum, where I have seen it. For the lettering see fig. 17.

D · M · . . . ESVN (or M)

This is obviously a tombstone, and the letters *esun* or *esum* are probably part of the dead person's name—e.g. Esunertus—but any further guess is useless. Apparently the Romans themselves robbed the stone from its cemetery, and used it in building the baths or basilica. But whether it was brought from one of the cemeteries outside the known limits of the town or belonged to an early burial place which was superseded by the growth of the town, we cannot now decide.

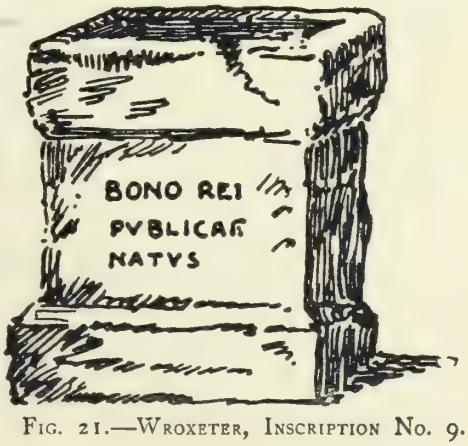
Wright, *Brit. Arch. Assoc. Journ.* xv, 315 plate, and *Uriconium* 360 ; Anderson, *Uriconium* 131, with the same cut ; hence Hübner, *Corp. Inscr. Lat.* vii, 161 (inaccurate), and Watkin, *Shrops. Arch. Journ.* 1879, ii, 336 (same cut). The text of line 2 is usually given as I · SVM, but it appears to me to be what I have printed above. Wright's idea of a dedication D(EO) M(AXIMO) [IOV]I SVM[MO is mere nonsense.

8. Irregular fragment, 17 in. long by 10 in. high, with parts of two lines of rude and not very clear letters. Found a little before 1854, probably near the church ; once in the Vicarage garden, now in Shrewsbury Museum, where I have seen it. See fig. 20 for the reading.

There were probably no more lines of letters below or above. It is not clear whether the first line should be read CORTV or CORIV, and whether a final s followed the v. In line 2 the first letter is probably C or G. The meaning must be left obscure. Only we may feel fairly certain that it is no part of a milestone, as Scarth, Watkin and Hübner think, nor is Watkin's idea of CORN(AVII) any more probable. CO(HO)R(S) IV is more possible.

Scarth, *Arch. Journ.* xvi, 65, and xxxiv, 399 (with different readings). Watkin, ibid. xxxiii, 265, and *Shrops. Arch. Journ.* ii (1879), pp. 333, 337, with inaccurate plate from Scarth's drawing; Hübner, *Ephemeris Epigr.* iv, 204, from Scarth ; seen by myself.

9. Rectangular base or pedestal, now about 20 in. high, broad, and deep, inscribed with three lines of rude letters, 2¼—2½ in. high, made by a succession of dots, as if by the point of an instrument. The tops of the letters in the first line are broken off. On the top surface are still traces of a shallow depression for a superimposed statue or monument. The measurements in Parkes MS. and his drawings show that the top line was perfect when found, but that since his time (about 1820) a little has been broken off. Found, according to Parkes MS. in 1819, but the precise spot is not recorded. It was in 1851 in the wall of the Vicarage garden at Wroxeter, and is now in Shrewsbury Museum, in the basement, where I have examined it. (Fig. 21 from water-colour drawing in Parkes MS.).




BONO REI
PVBLICAE
NATV

FIG. 21.—WROXETER, INSCRIPTION No. 9.

BONO REIPVBLICÆ NATVS, 'born for the good of the state,' was an epithet often applied to Constantine and later emperors in the fourth century. The sense requires the name or some indication of the emperor referred to; the stone may have borne a statue of some emperor, with or without his name on it. This perhaps is the most reasonable interpretation of the object. Others have taken it for part of a milestone and the three lines of lettering for the end of an emperor's titles. But it does not look in the least like this. Many writers, Dukes, Wright (*Guide*), and Anderson, say that the stone has been used in the middle ages as a font or holy-water stoup.

Parkes, MS. (good sketch); Dukes, MS. fol. 64 (good sketch), and *Brit. Arch. Assoc. Glouc. Cong.* 73, plate iii, 7 (bad); C. R. Smith, *Coll. Antiq.* iii, 32; Wright, *Brit. Arch. Assoc. Journ.* xv, 314, repeating Dukes' plate, and *Guide*, 71, 72; Scarth, *Arch. Journ.* xvi, 65, calling it an altar; Anderson, *Uriconium*, 131 (with cut); hence Hübner, *Corpus Inscr. Lat.* vii, No. 1166, who considers it a milestone, and Watkin, *Shrops. Arch. Journ.* 1879, ii, 335, who considers it an altar. Dukes (*Cong.*) Wright (*Guide*) and Anderson read BONA, an obvious error, and Smith gives NAT for NATVS. The last two letters VS are combined on the stone, in a form rather like an italic *Y*; the sketch of Parkes (fig. 21) is in this point inaccurate, and indeed gives the letters generally somewhat unsatisfactorily, though it seems to give the form of the stone well enough.

10. A round stone, resembling part of a pillar, 2 ft. high and 18 in. in diameter, was seen by C. R. Smith in 1851 in the garden of the late Mr. W. H. Oatley, near the churchyard at Wroxeter, and I have seen it there. Smith took it to be part of a milestone, but adds that the few remaining letters were insufficient to form a judgement (*Coll. Antiq.* iii, 31). Wright (*Brit. Arch. Assoc. Journ.* xv, (1859), p. 315, and *Guide* (1859), p. 74, and plate 6, also mentions the stone; he considered it at one time (*Journ.*) 'after careful examination,' to be part of a large column, and at another time (*Guide*) to be a milestone, and gives as lettering LIT I EB in two lines, while his illustration resembles a milestone more than a column. Anderson (*Uriconium*, 49, and plate viii, 2), calls it a milestone and shows as lettering IB I REI, part of which suggests the REI[PVBLICÆ] of the formula mentioned above (No. 9). Hübner also accepts it as a milestone (*Corpus Inscr. Lat.* vii, 1167); and so too Watkin (*Shrops. Arch. Journ.* 1879, ii, 333, 336), repeating Anderson's cut. To me the stone seems too neatly regularly wrought to be a milestone. The lettering on it is clearly IB in 4¼ in. letters with BEI (or BEL) in 3 in. letters below, and I do not think there was ever any more than this. The whole thing may well be more or less modern in date, and the letters the initials of modern men.

11. Two blocks of red sandstone, one 4 by 6 in., the other 4½ by 15 in., both probably walling stones, inscribed in very rude letters:

(1) ϛAAM

(2) ∭AAM

were found in 1860–1, in a room adjoining the baths called by the excavators 'the enameller's shop' (p. 234). They obviously are duplicates; the letters may perhaps be some workman's initials.

Scarth, *Arch. Journ.* xxi, 131 (reading G.M.M.); *Gent. Mag.* Oct. 1867, p. 514 (reading CAAM); hence Watkin, *Arch. Journ.* xxxi, 358, xxxviii, 299, and *Shrops. Arch. Journ.* (1879) ii, 337, with wrong date of finding. All these writers mention only one stone. The two are now in Shrewsbury Museum, where I have seen them.

12. A writer in the *Archaeologia Cambrensis* (1881, p. 363), mentions and figures an inscribed stone then to be seen in the north wall of Atcham Church. The letters, 2 in. tall, seem to have been RP∭ISO: their sense is irrecoverable. Watkin (*Arch. Journ.* xxxix, 362) suggested that the letters really on the stone were RPNATO (*bono reip nato*) but the reading given above is said to be quite clear. I have myself sought for the fragment in vain (see fig. 38, p. 278).

13. Fragment of painted wall-stucco, 5–6 in. long, found in 1859 in the basilica, now in Shrewsbury Museum. On it are the letters (fig. 20) RC preceded and followed by what may be A or M. They are too scanty to interpret. Published by Wright, *Brit. Arch. Assoc. Journ.* xv, 315; *Guide*, 79; and *Uriconium*, 113; *Gent. Mag.* Oct. 1867, p. 514; hence Watkin, *Arch. Journ.* xxxi, 358, and *Shrops. Arch. Journ.* 1879, ii, 337, and Hübner, *Ephem. Epigr.* iii, 68, p. 119. Seen by myself.

14. Another fragment of inscribed stucco with two lines of letters was found about 1859 on the wall of a passage in the baths, but was too soon damaged to be read. It is noted by Wright, *Arch. Camb.* 1859, p. 218 (woodcut); *Gent. Mag.* 1859, ii, 221 (with same cut); *Uriconium*, 130; Anderson, *Uriconium*, 22; and Hübner, *Corpus Inscr. Lat.* vii, 162. Wright (*Uriconium*) says he detected the letters ANT. His cut in *Arch. Camb.* bears no resemblance to this, and is in itself quite unintelligible; it was, he says, not copied till evil fortune had almost destroyed the writing.

15. An oculist's stamp of green, fine grained stone (a schist, not a jade, according to Scarth), $\frac{7}{8}$ in. in diameter, and $\frac{1}{4}$ in. thick, found in 1808 in ploughing a field near the 'Roman Wall' (i.e. the basilica) at Wroxeter. In Shrewsbury Museum since 1859. It reads (fig. 20):

TIB(ERII) CL(AVDII) M(ESSORIS) DIALIBA(NVM) AD OMNE VIT(IVM) O(CVLORVM) EX O(VO)

'The Dialibanum of Tiberius Claudius Messor for all ills of the eye, mixed with egg.'

*Dialibanum* is often mentioned by ancient medical writers as an eye ointment. It seems to have been compounded with the oleo-resin obtained from the λίβανος, that is, frankincense, which the ancients used freely, probably as an antiseptic. *Ex ovo* apparently means that egg was to be employed as a solvent to make the drug into an ointment. The preposition *ex* is still sometimes used in medical prescriptions to denote this. The medicine, in this case, must have been an ointment in a pot, and the stamp must have been used to make a metal or other label or capsule to go outside. I am informed that frankincense is still used in the East in medicine, and seems to have a tonic action on the mucous membrane; mixed with egg it might well be prescribed even in the present day for cases of ophthalmia as a mild resin ointment, and a preparation of it would keep good for a very long time.

The stamp differs from ordinary Roman oculists' stamps, in that it contained only one medicament, is round-shaped instead of square, and inscribed on the face and not on the edges. The initial M might indicate any *cognomen* beginning with M, but *Messor* has a special probability in that an oculist Tib. Claudius Messor is known from a stamp found in north France near Valenciennes, and it is quite conceivable that the Wroxeter stamp is also his.

First mentioned and figured by Parkes, *Gent. Mag.* 1810 (1), 617, pl. II and MS. fol. 69, hence Bayley and Britton, *Beauties of England*, xiii, 191, and Hartshorne, *Salopia*, 126; none of these understood its character or read it aright. Lersch, *Bonner Jahrbücher*, ii, (1842), p. 108, who had a reading from a Mr. Searle, and Way, *Arch. Journ.* vii, 368, first identified it as a medicine stamp, but neither gave a correct reading. J. Y. Simpson, *Monthly Journ. of Medical Science*, March, 1851, p. 248, reprinted in his *Archaeological Essays*, ii, 282, tried to emend the *Gent. Mag.* text, but without success; from Simpson, Scarth, *Arch. Journ.* xvi, 66. Another writer in the *Bonner Jahrbücher* (xx, 174), follows Hartshorne, and is less correct than Lersch. Wright (*Brit. Arch. Assoc. Journ.* xv, 317, *Arch. Cambrensis*, 1859, p. 268; *Gent. Mag.* 1859, i, 456; *Guide*, 69; *Intellectual Observer*, iii, (1863), 13; and *Uriconium*, 175), first gave a proper text, with a correct woodcut by Jewitt; from Wright, Anderson, *Uriconium*, 15, 98; Grotefend, *Stempel der röm. Augenärtzen* (1867), No. 23; Hübner, *Corpus Inscr. Lat.* vii, 1308, and Watkin, *Shrops. Arch. Journ.* 1879, ii, 337; from Hübner, Espérandieu *Receuil des cachets, &c.* No. 192 (with misprint *Worcester* for Wroxeter) and *Corpus Inscr. Lat.* xiii, 10021, 47 (reprinted Paris, 1905),—where dele reff. to *Arch. Journ.* xvii, 246, *Gent. Mag.* xlviii, 510, and 1859, p. 625, as wrong. Seen by myself. The text is certain. In line 2 the *i* of the syllable *lib* is placed over the *l*.

16. Tiny rectangular slab, apparently of steatite or soapstone, with smoothed sides and bevelled edges, 2 by $2\frac{1}{2}$ in. broad and long, and $\frac{1}{2}$ in. thick. Found in 1859–60, close to the 'enameller's shop' near the baths. Now in Shrewsbury Museum, where I have seen it. On the back in a small label is inscribed in minute letters, of which the first is ornament (fig. 20).

◅ LICINIANVS

*Licinianus*

Probably a painter's palette: several similar but uninscribed stones were found with it, and traces of colours were seen or imagined on them by the excavators. The name will be that of the painter. The reading which I give seems fairly, if not absolutely, certain. Roach Smith's suggestion, *Diciniv(i) (ma(nu)* does not fit the actual lettering, and the name *Dicinivus* itself is unknown and improbable.

Published by Wright, *Brit. Arch. Assoc. Journ.* xv, 316 and woodcut, reading (after C. R. Smith) DICINIVMA i.e. *Diciniv(i) ma(nu)*: repeated in *Intellectual Observer*, iii (1863), 15 and *Uriconium*, 177; hence Scarth, *Arch. Journ.* xvii, 246; Anderson, *Uriconium*, 97; Hübner, *Corpus Inscr. Lat.* vii, 1239, who erroneously puts it down as a tile, and W. T. Watkin, *Shrops. Arch. Journ.* 1879, ii, 337. Seen by myself.

17–19. Three marked weights, found, with others uninscribed, in the excavations of 1859–60 in the so-called market place, west of the baths. Now in Shrewsbury Museum.

17. Stone, weighing $11\frac{1}{4}$ oz., marked I.

18. Stone, weighing $3\frac{3}{4}$ oz., marked I, rudely and perhaps accidentally.

19. Lead, weighing $2\frac{1}{2}$ oz., marked II.

For 17 and 19, see Wright, *Arch. Cambrensis*, 1895, p. 260; *Gent. Mag.* 1859, i, 625 and ii, 222; *Guide*, 80; and *Uriconium*, 164; hence Hübner, *Corpus Inscr. Lat.* vii, 1277, miscalling

No. 19 a stone and giving the weights roughly. No. 18 seems to have been overlooked hitherto. Seen by myself.

20. Fibula, found in the excavations of 1860–1 in or near the baths, 2¼ in. long, zoomorphic in type, being fashioned like a dog, hinged, and (apparently) enamelled. On the sheath of the pin, formed by the dog's outstretched tail, are the letters

FECIT

*fecit*

The name of the maker was doubtless inscribed on some other part of the fibula, but has disappeared (fig. 24, p. 254).

Published by Scarth, *Arch. Journ.* xxi, 131 ; Wright, *Uriconium*, 280, with woodcut ; from Scarth, Watkin, *Arch. Journ.* xxxviii, 295. Now in Shrewsbury Museum. Seen by myself.

21. Gem or seal of opaque greenish stone, probably from a ring, found at Wroxeter shortly before 1828, with incised letters

FƎIX

*felix*, perhaps 'May you be happy.'

Parkes MS. B.M. Add. 21180, fol. 79 ; published by Leighton, *Gent. Mag.* 1828 (i), 1898, with cut ; whence Hübner, *Corpus. Inscr. Lat.* vii, 1326 ; and Watkin, *Shrops. Arch. Journ.* 1897, ii, 336. Where it now is, I do not know.

22. Key ring, with faint traces of lettering on the ring, now in Shrewsbury Museum, where I have seen it (Wright, *Uriconium*, 283, fig. 2).

...RIAI...

(23–28.) Stamps on earthenware.—No inscribed tiles have yet been noted at Wroxeter. But one lamp and some pottery bear potter's stamps. Most of these are now in Shrewsbury Museum. A few, of which the present home is unknown, are marked by an asterisk. I have copied all those which are not asterisked or ascribed to Miss Taylor's copies. It will be observed that most of the items are unpublished. Nearly all the stamps are known from other sites : I have added notes only to a few of more special interest.

23. Lamp, found in the cemetery in 1861, inscribed in the usual raised letters MODES, *Modes(ti)*, 'the work of Modestus.' Published by Johnson, *Arch. Journ.* xix, 80, and *Gent. Mag.* 1862, 400 ; Scarth, *Arch. Journ.* xxi, 135 ; Anderson, *Uriconium*, 120 and cut ; hence Hübner, *Corpus Inscr. Lat.* vii, 1330 ; and Watkin, *Shrops. Arch. Journ.* 1879, ii, 338.

24. Samian (terra sigillata) : Marks on the outsides of ornamented bowls of shape 37. The first three belong to Lezoux (Déchelette i, 156, 162, 173).

CIN . . .—in large raised letters, amongst the ornament, *Cinnamus*
. . LBVCI—the same, *Albuci*
. . . . . ĀI—the same, *Paterni* (Miss Taylor)
CVL—in large raised rude letters, below the ornament
FƎICIO—in small sunk letters on a tiny label, among the ornament, *Felicio*

25. Samian (terra sigillata) : Marks on the inside of plain ware, cups or saucers.

AIIAIANIM—*Aeliani m(anu)*
AABINI·M—*Albini m(anu)*
AVITVᶜF (T faint)—probably *Avitus f (ecit)*
CAIAIAF—possibly *Calava f (ecit)*
CALVINVS (L doubtful)—probably *Calvinus*
MAЯIϘVAƆ—*Caupiram*, a stamp found on the Continent. See fig. 20
CRACVNA·F—*Cracuna f(ecit)*
CRAIICVS—probably meant for *Graecus*, but here, as on some specimens of the same stamp found on the lower Rhine, the initial C is clear (*Corpus Inscr. Lat.* xiii, 10010, 691)
CRCIRO OFI—*Creciro of(f)i(cina)*
DIVICATVS—*Divicatus*
LVPPA F—*Luppa f(ecit)* (stamped twice)
MALLED . .—*Malled [o f(ecit)*
MARTINI—*Martini*
MVXTVLLI·M—*Muxtulli m(anu)*
NVMIDIAA—*Numidi ma(nu)*

Q·V·C—the initial of some potter. Two specimens
OFPRIM . . .—*of(ficina) Prim[i;* only one or two letters lost
REBVRRI OF—*Reburri of(ficina)*
SATVRNINI—*Saturnini*
ꝺIEDDI IO—*Teddi*, or perhaps rather *Teththi*. The barred D is a Gaulish letter which generally seems to correspond to a *th* and sometimes to an *s*. The stamp is known elsewhere and is published by Anderson, *Uriconium*, 54. See fig. 20
VIRONI· OF—*Vironi of(ficina)*
ĀEITINM—uncertain reading
. . . INTIRIOM—uncertain

26. Samian (terra sigillata): Stamps of which it is not recorded whether they are on plain or on ornamental ware.

* IANVARI, Scarth, *Arch. Journ.* xvi, 68; Watkin, *Shrops. Arch. Journ.* 1879, ii, 338
* IVCVN, presumably *Iucundi*. Watkin, as above
* ELSI, presumably *Celsi*. Watkin, as above
* OFFICINIA, Dukes' MS. (Soc. Antiq. Lib.), fol. 41 and fig., plainly misread
SAMILLI·M (compare *Corpus*, xiii, 10010, 1710). Shrewsbury Museum: copied by Miss Taylor

27. Mortaria (or Pelves).

* DOCILIS·F—published by Scarth, *Arch. Journ.* xvi, 68; C. Roach Smith, *Coll. Ant.* iii, 32; Watkin, *Shrops. Arch. Soc.* 1879, ii, 338; Hübner, *Corpus Inscr. Lat.* vii, 1334, 26
VITALIS / VITALIIF —*Vitalis f(ecit)*, the name being repeated twice. The clay of this and of the following vessels is said to be similar to that found at Broseley. See fig. 20
ꞰAMIIM—meaning uncertain
ƆIIC—on each side of the spout, meaning uncertain

28. Amphora handles.

QMR (the R faint)—initials of the maker
IN—perhaps also initials
* SPAH—found in a grave near Tern Bridge in 1798. Recorded by Parkes (MS. Add. 21011, fol. 38 in Brit. Mus.), cited *Arch. Journ.* xvii, 246; *Gent. Mag.* 1798, i, 162, almost identical with Parkes MS.; hence Wright, *Uriconium*, 35 note; Anderson, *Uriconium*, 14; Hübner, *Corpus Inscr. Lat.* vii, 1331, 111.

In addition to the above, there are in Shrewsbury Museum some illegible fragments which I have omitted. Dukes (MS. fol. 50) also mentions and figures the outside of a globular vase of rude brown ware having 'the word *officinal* written inside.' This sounds like the OFFICINIA quoted above, but that is Samian, not rude brown ware.

## *APPENDIX TO INSCRIPTIONS*

The following three items, often included among the Roman inscriptions of Wroxeter, do not deserve a place there :—

29. Dukes (*Brit. Arch. Assoc. Gloucester Cong.* 73 and plate), records and figures a tombstone 'supposed to have been found in the vicinity of Wroxeter' and presented to the Shrewsbury Museum in 1841. Dr. H. Johnson (*Arch. Cambr.* 1856, p. 367) and Watkin (*Shrops. Arch. Soc.* 1879, ii, 334) repeat the statement. Wright, however (*Brit. Arch. Assoc. Journ.* xv (1859), 314, and *Uriconium*, 360), states that its history was uncertain, and that reasons existed for believing it of Italian origin. The appearance and general character of the object entirely confirm this, and we may omit it from the Roman inscriptions of Wroxeter (*Ephem. Epigr.* vii, 865). Hübner inclined to the same view, and only admitted it to the *Corpus* (vii, 159) because he—wrongly—thought the evidence as to its Wroxeter origin convincing. Seen by myself: the text is :—

*D(is) m(anibus) Antoniae Gemellae Diadumenus pientissimae fecit: vixit annis xxxiii.*

30. An altar, bearing the inscription, *Deabus nymphis Britanniae L. Caractacus Cornautus, v.s.l.m.*, is said to have been found at Wroxeter before 1853, and to exist still at Frodesley Park. A sketch of it was exhibited by the Rev. Thomas Gleadowe of Wroxeter to the Chester Archaeological Society in 1853 (*Proc.* 1st Ser. i, 430), and the object itself was afterwards seen by Mr. Roach Smith. It is an unquestionable forgery. Smith describes the stone as 'new,' and the

inscription as 'fresh and perfect'; the text of the inscription itself is epigraphically impossible in almost every line, and in particular it admits the incorrect spelling, Caractacus, of the British name known to the Romans as Caratacus, and now Caradoc.

Watkin, *Arch. Journ.* xxxi, 358, quoting Roach Smith and *Shrops. Arch. Journ.* 1879, ii, 333, 338; hence Hübner, *Ephem. Epigr.* iii, 149, who reads *Cornavius*, which is perhaps what the forger intended to give.

31. Scarth (*Arch. Journ.* xxxiv, 399) mentions a fragment inscribed T.G. which 'used to be at Donnington,' a mile south-east of Wroxeter and about as far south of the line of Watling Street. This he considers a relic of a Roman milestone, but he gives no reason for his opinion. Hübner (*Ephem. Epigr.* iv, 204) cites him without offering any opinion. It may be safest here to consider the item as unproven till further evidence emerges.

### vi) ARCHITECTURAL FRAGMENTS

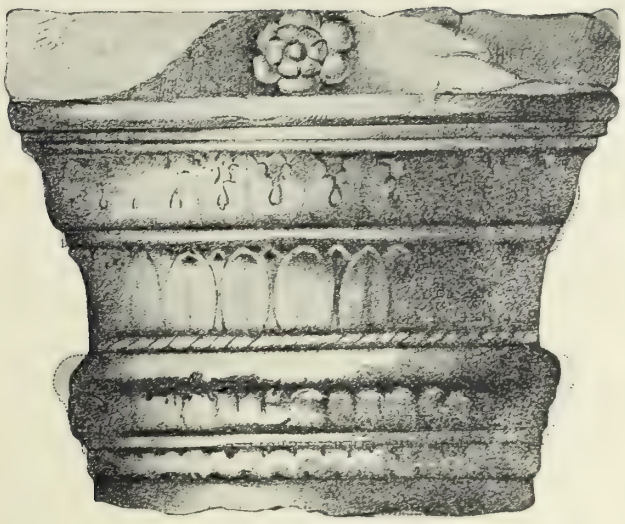
These have been described with great care by Mr. Fox, and we may do best to give his account of them.

> 'They consist almost exclusively of capitals bases and shafts of columns of which the greater number are to be found in Wroxeter, in the ruins of the Baths, and in the gardens of Mr. Everall and Miss West; a small quantity is preserved in the Shrewsbury Museum, and scattered specimens are to be seen in the villages at no great distance from the site. At Uppington-on-Severn are two fragments of Corinthian capitals, together with an uninscribed altar lying in the churchyard—all three taken from the walls of the church when it was restored eleven years ago. This church dates from Saxon times. In the neighbouring garden of Mr. Ashdown's residence is a fine base of a column, which, judging by its size, must have come from the Roman city. At Withington, in the vicarage garden, is a small base also like the fragments at Uppington, taken from the walls of the village church when it was rebuilt. A much battered portion of a capital is to be found in the churchyard at Condover, and much ashlar from the city is worked up in the walls of Atcham church, the same being the case with the church of Wroxeter itself. In fact, materials from the ruined town were evidently employed, doubtless to a considerable extent, at an early date, in the district surrounding it. The bases vary considerably in size. The diameters of the columns to which they belonged may be classed thus: (1) some from 5 to 7 inches; (2) some from 1 foot to 1 foot 7 inches; and (3) a few over 2 feet. The mouldings of these bases show varieties of what is usually called the Attic base. A marked feature is the use of a very large hollow or a cyma reversa moulding to unite the upper torus with the shaft.
>
> The capitals are more varied in arrangement than the bases, as is usual. One capital especially is worthy of note.[1] They are mostly varieties of the Doric, but there are some few examples of the Corinthian, order. The amount of variation of both classes of capital from the usual classical types is remarkable, and this is not only so here but on most other Roman sites in Britain. Two specimens of an enriched Doric are to be seen placed on portions of shafts at the churchyard gate at Wroxeter (fig. 22). They are said to have been fished up from the Severn where it flows past the residence of Mr. Everall (called "the Cottage" on the Ordnance map and on the plan). These capitals are good in style; but as they are much degraded by exposure to the weather, which has effaced all the sharp edges of the carving, they have the appearance of being ruder than they were when perfect. They are carved also in an intractable material, a grey sandstone grit, which precludes delicate finish in the workmanship.[2]
>
> Besides the fragments of Corinthian capitals already named—viz., the large one, presumably part of a column from the *basilica*, and two small ones in Uppington churchyard—there is another of some size preserved in Shrewsbury Museum (fig. 22). It measures 1 foot 9½ inches in diameter above the astragal, and shows the first range of leaves and part of the second. The upper half is wanting.[3] It was found in the court marked U, in the plan of

[1] A sketch of this, but showing it reversed, as a base, and not to scale, is to be found in J. C. Anderson, *Uriconium*, pl. viii, fig. 6.

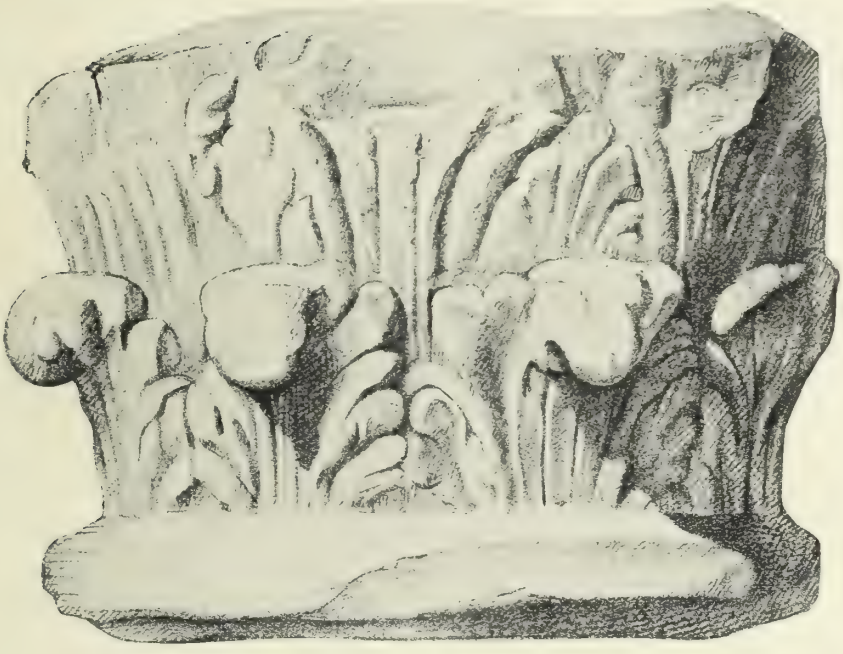
[2] An indifferent illustration of one of these capitals may be seen in C. Roach Smith, *Collectanea Antiqua*, iii, pl. viii. Somewhat better representations of them are given in Wright, *Uriconium*, 209 and in J. C. Anderson, *Uriconium*, pl. vii. None are to scale.

[3] This capital is figured in Wright, *Uriconium*, 157, and in Anderson, *Uriconium*, pl. vii, the former illustration being the more faithful of the two. No scale is given in either work.



Capital Dredged up from the Severn

*(Now in Wroxeter Churchyard)*



Two Capitals, probably from the Basilica (found in Room U on plan)

(After Fox)

Fig. 22

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the baths, but could not have belonged to that building. The other large fragment of a capital in this museum, just referred to as from the basilica, was discovered in the same place (fig. 22). This scattering about of details of the ruined buildings occurs whenever Roman sites have been examined.

Two other almost formless portions of Corinthian capitals are also to be found at Wroxeter, in the gardens previously named.

With the exceptions already treated of, the shafts of columns are of no great size, and have come from houses rather than from public buildings. There are, however, two, if not three, fragments to which some interest attaches from their having rare surface ornamentation upon them in the form of scale work. The larger fragment shows also at the lower end a broad band of a diamond or trellised pattern ; and set in a long oval-shaped hollow in this scale work, about 7 inches above the trellised band, is a figure of Bacchus in relief, nude but for a slight piece of drapery, with the thyrsus in the left hand and possibly a bunch of grapes or a cantharus in the right, the object being too worn to be made out. A panther beside him looks up at this object (fig. 23). The group is much worn from exposure and bad treatment, and from this cause appears more barbarous than was really the case. The whole treatment recalls that of a gem, as if the subject might have been copied from one. The hollow in which the figure is set is 1 foot 3½ inches high, and the figure nearly fills the whole height. The diameter of the portion of shaft, which unfortunately is fractured across the figure, is 1 foot 1 inch. This fragment is at present preserved in the ruins of the baths.

The second one, carved in very low relief upon the scale work with which the column is covered, represents a figure of a winged genius kneeling upon a basket and holding in his left hand what appears to be a bunch of grapes. The figure is of inferior workmanship to that first described, and the diameter of the shaft on which it is carved is smaller, being only 10½ inches, but both these shafts may have belonged to the same structure.[3] This second fragment is incorporated in the summer house in Miss West's garden (on the south side of the church). Both were found built up in a wall, and removed and taken care of by the late Mr. Oatley (whose house is now occupied by Miss West), before any excavations for purposes of discovery had been made on the site. The shafts are of greyish sandstone.'[4]

## In addition to these described by Mr. Fox,

Shrewsbury Museum contains a carved stone, which appears to represent the upper part of a male figure standing in a niche ; the right arm is bent up and holds something in the hand. The whole measures 15 in. high and 10 in. wide. It is meant perhaps for Mars, but it is too worn for precise identification (fig. 23).

Also in the Museum is an altar, measuring 19 in. by 10½ in. and 21½ in. high. On two of its faces are carved figures, probably of gods or goddesses, but much worn (fig. 23). It was said to have been found near Rushton, about 1½ miles east of Wroxeter, and was at a later date at Uppington, but it was not near any known road, and it probably came from Wroxeter. It seems to be the same as that described above by Mr. Fox as having come out of the walls of Uppington church.[5]

Several pieces of scale work are to be found in the gardens of Miss West and Mr. Everall and in Shrewsbury Museum. All the stones are of local sandstone, 'ranging in colour from red to nearly white, and a grey sandstone grit, that is still to be found in the quarries of Hoar Hill, near Wroxeter.'

[3a] C. Roach Smith, *Collectanea Antiqua*, iv, where on Plate VII is a very rough sketch of the lower half of the shaft, comprising half only of the figure of Bacchus, together with that carved with the winged genius. A better, but equally inaccurate, representation is given of the Bacchus in J. C. Anderson's *Uriconium*, Plate VIII, Fig. 7. No scale is given in any of these representations. C. Roach Smith calls the figure in the oval on the larger shaft Bacchus or Atys. Wright in his *Uriconium* (p. 210) considers it the latter, an opinion based apparently on a misunderstanding of the arrangement of the scanty drapery.

[4] To this account by Mr. Fox we may add that the first was said to have been found in a well in 1830 ; Dukes' MS. Hist. of Uriconium, fol. 65 ; Scarth, *Arch. Journ.* xvi, 67 ; and Watkin, *Shrops. Arch. Journ.* 1879, ii, 338. Mr. Fox gives sections of the columns ; his plates of the carved capitals and shaft are here reproduced.

[5] *Cat. of Loan Exhibition*, 91 (Shrops. Arch. and Nat. Hist. Soc. 1898). Information from Miss Auden, Condover ; it belonged to Lord Barnard, but is now in Shrewsbury Museum.

## (vii) SMALL OBJECTS FOUND IN THE TOWN AND CEMETERIES

The list of small objects from the site or its neighbourhood is comparatively short. Most of the finds made before 1859 have been scattered or lost without record. Those made during the excavations are now in Shrewsbury Museum. A few of these have already been mentioned in our account of the buildings. It remains to complete the list.

1. *Pottery.*—The pottery includes a comparatively small amount of Samian, nearly all in fragments (fig. 32): Among these are a few pieces of the first-century types known as 29, 30 and 37, some quite late ware, and some incised pieces, datable to the third century. A number of bases with potters' marks have been already recorded (see p. 250). Upchurch and Castor ware also occur—one small piece of the latter with the usual hunting scene in relief—and much common pottery in every variety of colour and shape, most of it apparently found in the cemetery. Some of this latter is a local product commonly known as Salopian, made of clay similar to that of Broseley in the Severn valley,[5a] which is still used for tiles and tobacco pipes. It is coarse and brittle, coloured red or white, and if white, it has stripes painted on it in red and yellow: the vessels include many jugs, amphorae and mortaria, some stamped (see p. 251). One curious vessel in red ware deserves notice. It is of cylindrical shape, 8 in. high, flat at one end with a round handle on each side and a hole or spout providing the only opening. It resembles a modern hot-water bottle more than anything else. Besides these there are also several colanders, some lamps from the cemetery, mentioned above, a head of a terra-cotta statuette, of the common Gaulish type, and some spindle-whorls.

2. *Glass.*—Very little glass has been found, except the few bowls and bottles from the cemetery which have already been mentioned (fig. 32). A glass bodkin (*Cat. of Mr. Green's Mus., Lichfield*, by J. Jackson, 1782, p. 58), beads, some fragments of bottle glass, and a few bits of window glass are all that we have here to add.

3. *Metal objects* are much more numerous. One gold ring, found between 1710 and 1720, set with an intaglio in onyx on which was engraved a Jupiter Serapis, weighing 7 dwt. 15 gr. (*Brit. Arch. Assoc. Journ.* iv, 316, then in a private collection) and three silver rings, are the only objects recorded in the more precious metals. In bronze were, firstly, several statuettes. (1) Diana with bow and quiver, 3 in. high, found in 1848 (Johnson, *Gent. Mag.* 1862, i, 401; Scarth, *Arch. Journ.* xvi, 68). (2) Mercury, 3¼ in. high, found at the same time (Scarth, *Arch. Journ.* xvi, 68; xix, 81; Watkin, *Shrops. Arch. Journ.* 1879, p. 329) (fig. 32). (3) A rudely carved Venus Genetrix, 4¾ in. high, found before 1856 (fig. 32), with (4) a Cupid (*Arch. Cambrensis* [1856], 366, 367; Wright, *Guide* [1859], p. 80: the three first are now in Shrewsbury Museum). (5) An Apollo and lyre, found in 1824 (figured in Dukes' MS. Hist. of Uriconium, fol. 47, hence Scarth, *Arch. Journ.* xvi, 68, and Watkin, *Shrops. Arch. Journ.* 1879, p. 328, both giving wrong date of find). (6) A bronze lion found in 1820 (figured in Dukes, fol. 48, hence Scarth, *Arch. Journ.* xvi, 68, and Watkin, *Shrops. Arch. Journ.* 1879, p. 328), and several small heads, perhaps parts of statuettes or other objects. Two heads are mentioned by Dukes (fol. 48) and are perhaps the same as the two masks mentioned in *Gent. Mag.* 1856, p. 367; a small grotesque head, a dog's head and paw forming the pedestal of a box or cabinet, and the head of a lion, mentioned above (p. 233), are all in Shrewsbury Museum; a bird's head occurs in *Gent. Mag.* 1860, ii, 144. Of brooches there are almost all shapes (figs. 24, 32). None belong to the very earliest types, but there is an uninscribed Aucissa specimen, while several crossbow specimens, one 3½ in. long, probably belong to the fourth century. Some are enamelled. There is also one example of the shield fibula and one very pretty circular

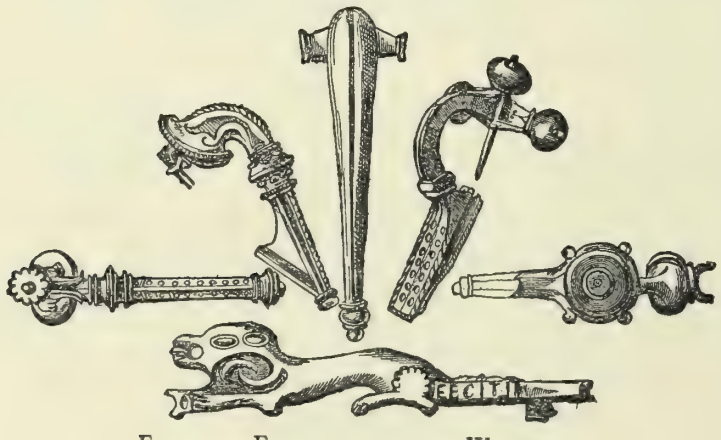
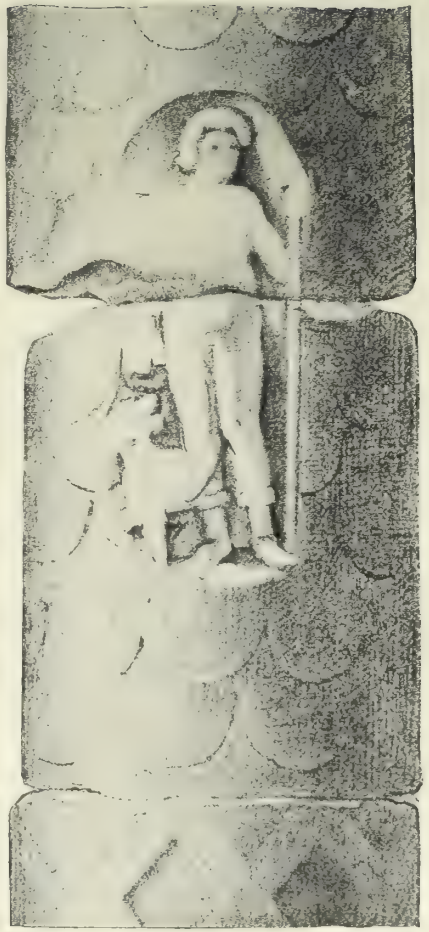


FIG. 24.—FIBULAE FOUND IN WROXETER
(After Wright, *Uriconium*, 280)

[5a] Wright, *Uriconium*, 251.

Carved Stone from Wroxeter
(*From photograph*)



Carved Shaft, representing Bacchus or Atys, found at Wroxeter
(After Fox)

Altar found near Wroxeter
(*From photograph*)

Fig. 23

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brooch with four little projecting knobs, enamelled in red and blue, with its pin still attached (fig. 32), two well-made penannular brooches, and one fashioned in the shape of a dog, 2¼ in. long, with an inscription *fecit* on the end (see inscriptions). Other ornaments include pins, buttons, a small enamelled scent-box, some good 'horse-trappings,' an ornament in the shape of a serpent, two buckles, a skiff-shaped purse meant apparently for wearing on the wrist, a large bracelet and two small ones, one being of twisted wire, ten bronze rings, and two key rings. With these we must include the intaglio rings that have been found at Wroxeter: (1) Huntsman flying from a lion; in a private collection in 1863; figured in Dukes' MS. Hist. fol. 45 (fig. 25). (2) Hippocampus, with trident through it (Dukes' MS. Hist. fol. 45; *Brit. Arch. Assoc. Journ.* Gloucester Congress, 73, pl. iii) (fig. 26). (3) Two Cupids, one with mask (ibid. 73, pl. iii) (fig. 27). (4) Engraved on black stone with vein of pure white on the face, a figure of Isis, or her priestess, with sistrum and urn (a common type), found in 1840 (fig. 28). (5) Engraved on bright red stone, a Mars helmeted, seated, holding out Victory in his right hand and shield and spear in his left (common type); now in Shrewsbury Museum (fig. 29). (6) Found in excavations of 1860, a faun (?) jumping out of a Nautilus shell (fancy scene), set in an iron ring; now in Shrewsbury Museum (Scarth, *Arch. Journ.* xxi, 137) (fig. 30). (7) Worshipper of Bacchus, carrying thyrsus and robe (fig. 31). All these are described and figured by Wright in *Brit. Arch. Assoc. Journ.* xix, 109, pl. x, and *Uriconium* (1872), 317. (8) Engraved on red cornelian the device of two birds on perches eating out of a bowl in the centre (see p. 233). (9) Ring inscribed *Felix* (see section on inscriptions). Other objects include a mirror, fragments of another (see p. 240), tweezers, a strigil, styli, spoons, spatulae, a flat knife and another small one, three small bowls and a bottle, a steelyard, a scale pan with three holes (*Intell. Observer*, xii, 150), a lock from a box containing a lancet (see p. 240), a small object

Fig. 25.

Fig. 26.

Fig. 27.

Fig. 28.

Fig. 29.

Fig. 30.

Fig. 31.

thought to be a curry comb (*Gent. Mag.* 1861, ii, 57; 1862, ii, 677), a spur and some bits of bronze armour found in 1818 (Dukes, fol. 48). In lead are a bowl 3 in. in diameter, and a scoop or ladle (p. 233), a handle and fragments of a vessel in block tin, weights of 20¼, 2½, 2¼ oz. respectively (p. 234), and a small sarcophagus containing an urn (p. 241), all of which have been already mentioned. A hammer-head and some large lead plates, a cock, apparently a toy, are the only other objects.

Much iron occurred everywhere, and includes a tyre and hoops of a wheel, found near the court marked U; spears and spear and arrow heads, spurs, bit, and horse-shoe, pickaxes, an axe and adze head, a saw, a bill-hook, chain, padlock, keys, knives, styli, spoons, tweezers, a round box (p. 234), two candlesticks, nails, bolts and cramps.

4. *Stone.*—In stone, a female head in red sandstone, an alabaster lamp-stand, five small painters'-palettes in steatite stone, one inscribed (see inscriptions, No. 16), stone weights weighing 20½, 11¼ and 3¾ oz. respectively, a knife handle, an amber and parts of a jet ring, spindle-whorls, whet-stones, and querns.

5. *Bone.*—In bone, many needles and pins, buttons, combs, a skewer, a sword handle, and many spindle-whorls. Many wooden pins and a piece of ebony inlaid in white and green and lined with silver found in 1895, but very doubtfully Roman, complete the list.

Of animal bones we note especially those of the *Bos longifrons*, the roe, red deer, wild boar, and elk. Oyster and other shells were plentiful.[6]

[6] Most of the above are in Shrewsbury Museum, and, except where other references are given, they are recorded in the accounts of the excavations mentioned above and also in Dukes' MS. Hist. of Uriconium, *Arch. Cambrensis* (1856), 366, 367; *Gent. Mag.* 1860, i, 476; ii, 144; 1861, ii, 57; *Reliq.* iii, 172; *Intell. Observer*, iii, 12.

## (viii) COINS

It would be impossible to compile a complete list of the Roman coins unearthed at Wroxeter during several centuries ; for the most part they are unrecorded and mislaid. It would be equally unprofitable to enumerate all the coins recorded from a site occupied from the earliest to the latest years of the Romano-British period. It may suffice to say that lists are given by Dukes in his MS. preserved by the Society of Antiquaries (silver only), by Wright in an appendix to *Uriconium*, partly repeating Dukes, by Gough in his edition of Camden, and to a lesser degree by many others. All agree in saying that many thousands, principally copper, have been found, and that they reach from the beginning to the end of our period, but no proper list exists and the records refer principally to the silver. Early coins are naturally few. The following seems a complete list of those recorded earlier than Vespasian :—

One British silver, once in the collection of W. H. Oatley (*Brit. Arch. Assoc. Journ.* xv, 208 *n.* and *Uriconium*, 65), too imperfectly described to be identified, and not included in the lists of Sir John Evans.

Three Republican silver : Porcia, about 100 B.C. (Babelon Porcia, no. 3 ; Mommsen-Blacas, ii, 365) ; Fonteia, about 100 B.C. (Babelon Fonteia, no. 1 ; Mommsen-Blacas, ii, 356) ; Sicinia-Coponia, B.C. 49, (Babelon i, 381 ; ii, 459).

One Antony, legionary denarius (Leg. xix)—a coin which may have, like some of Antony's denarii, been in circulation 100 or 200 years after his death (Haverfield, *Arch.* lii ; Cohen, type 55).

Four 'second brass' Augustus.

One 'first brass' Antonia (Cohen, type 6).

One gold Tiberius ; rev. PONTIF. MAXIM. ; Livia seated to the right holding a spear and a flower ; A.D. 15 (Cohen, type 15 ; Dukes and Wright). Now in Shrewsbury Museum.

One 'first brass' Germanicus (Cohen, type 4).

Four : one silver, one first, one second, and one third brass, Claudius.

One first and one second brass Nero.

Two silver Galba (Gough and *Gent. Mag.* 1859, i, 448) ; Parkes (MS. Add. 21180, fol. 70) mentions a 'first brass' ADLOCVTIO.

One denarius Otho SECVRITAS PR (Cohen, type 15 ; Dukes and Wright) ; one denarius VICTORIA OTHONIS (Cohen 27 ; Dukes fol. 90).

Silver coins of every emperor after Vespasian down to Gallienus occur ; for some reason, those of Severus Alexander seem peculiarly numerous in our records and a rare coin of his wife Orbiana (CONCORDIA AVG, Cohen 1 or 2) is also mentioned by Dukes (fol. 96). The latest coins hitherto recorded seem to be those of Gratian. The hoards found in the baths contained also some barbarous 'third-brass'—miscalled 'minims' by the writers who record them—which may belong to the third century but are more reasonably attributed to the early fifth century. Further excavation and minute observation is, however, required before we can quote the coins as giving us more than tentative clues for the dates either of the rise or the fall of Wroxeter.[7]

An interesting find connected with the coins may be fitly recorded here. This is the discovery at different times of four coin moulds at Wroxeter—three in the eighteenth century and one in 1860 in the excavations of a tower near the river (see p. 235). They include two denarii of Julia Domna, one of Severus, and one of Plautilla.[8] Others of the same date were found at Ryton near Condover, a few miles to the west (see Alphabetical Index, Condover). Minting—whether counterfeiting or not—apparently of small silver coins, must have been carried on at Wroxeter or in the neighbourhood.

Only one hoard is recorded, though probably several have been discovered, besides the two found in the central buildings (pp. 232, 233). This was never properly examined, and all that seems known of it is that it consisted of many silver coins in good condition—according to the finder's son, 402 denarii—and one of the coins seems to have borne the heads of Julia Domna, Caracalla, and Geta. The sale of them to casual purchasers is said to have produced twenty-eight pounds.[9] Parkes in his MS. (Add. 21180 fol. 78) figures two earthenware urns which (he states) contained silver and copper coins found at Wroxeter, but gives no clue to their dates or characters. This is probably a distinct hoard or pair of hoards, being found earlier than that noted by Wright. What a find made in the cemetery about 1810 exactly was, cannot now be determined. Probably they are only the coins used in burials.

[7] Shrewsbury Museum contains in its coin cabinets some 60 early Republican issues and also coins of Theodosius and of Byzantine emperors down to the early seventh century. But we understand from the curator, Mr. Ll. Kenyon, that these were *not* found at Wroxeter.

[8] The coin mould of Julia Domna found in 1860 is in Shrewsbury Museum. A silver coin exactly fitting it was turned up in the excavations near the 'Old Wall.' Scarth, *Arch. Journ.* xvi, 273 ; Wright, *Brit. Arch. Assoc. Journ.* xvi, 209 ; *Uriconium*, 101. For the others, Soc. Ant. MS. Minutes, 30 Jan. 1723, i, 79 ; Sir H. Baker, *Philos. Trans.* xliv (1747), 57–9, hence Scarth, *Arch. Journ.* xvi, 62, and others.

[9] Wright, *Uriconium*, 331, 332.

Fig. 32.—The three Glass Vessels at the Top of the Plate were found in the Eastern Cemetery. The Samian Bowls and Bronze Statuettes and Brooches were found somewhere in Wroxeter. All are now in Shrewsbury Museum. (*From photographs*)

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## 4. Rural Sites

### (i) LINLEY HALL

The site of these remains is at the north-west corner of the avenue leading to Linley Hall, and beneath a portion of the road from Lydham to Norbury, which separates the avenue from Linley Park. It is on the west bank of West Onny river, 700 ft. above sea level, with a fine view to the west, just above a valley that gives access to Montgomery and Wales from the south-east, and right in the centre of the lead-mining district. Here remains have been found over a considerable area. The most definite and best recorded are those of a small part of a large dwelling-house—partly excavated in 1856 by Mr. More, the owner, and Mr. Wright. A small plan made at the time (fig. 33) shows a building measuring 32 ft. by 14 ft., running north-east and south-west, containing three rooms with pillared hypocausts of tile and roughly-cut stone, one floor of lime and pounded brick only remaining. The eastern wall of this building, 2½ ft. to 3 ft. thick and 90 ft. long, met at its south-east end another wall at right angles, 140 ft. long and 4 ft. thick, running north-west. Along the outside of the east wall was a well-made stone drain, and beyond it again, 4½ ft. from the main building, was a channel of curiously constructed flue-tiles, with a small chamber measuring 11 ft. by 8 ft. projecting on its eastern side. Both drain and channel ended at 60 ft. from the Park wall. Near them was much black earth in places, and ashes from a furnace. A stone aqueduct, with a concreted channel in it, ran along the western end of the building, and was traced for a distance of 880 ft. north-east. It pointed to a pond on the east of Linley Hall, supposed to be the site of a Roman reservoir, but was probably meant to carry water from

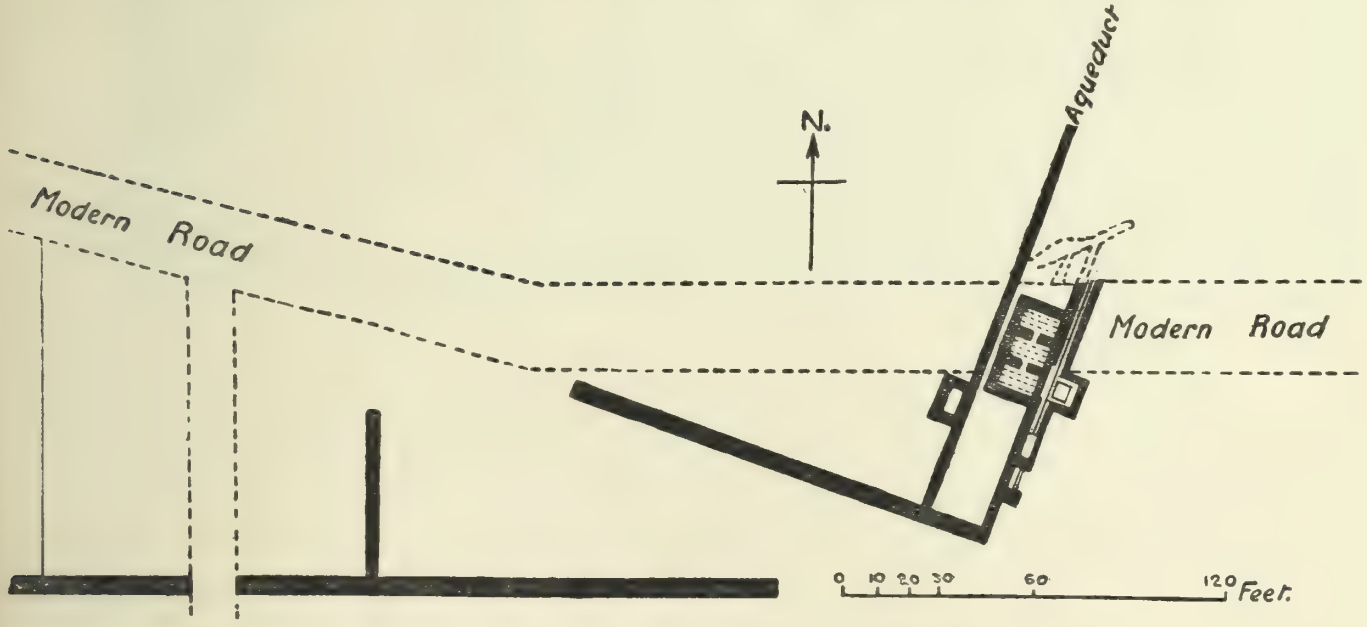


Fig. 33.—Plan of Structures found at Linley Hall

(After Wright)

some springs north of Linley Hall. Besides these structures, other walls were traced in the fields south-west of the building and beyond the road from More. The most southerly one ran due east and west for 240 ft. and was about six feet thick. Yet another wall, said to be 12 ft. thick, running parallel to this, was found 150 yds. north of Linley Hall, and also transverse walls thought to join these. Within this area in the park, walls and hard gravel floors were constantly found, besides a well. No mosaic was found, and no small objects are recorded, except flue-tiles and plaster from the hypocaust rooms. The building was thought to extend no further to the east.[1] What its exact character was must remain uncertain. Plainly it was meant to be inhabited, and the thickness of its walls, 4 ft. to 6ft. and (as is alleged) 12 ft., indicates inclosures round a dwelling or a very substantial residence; but much more excavation is needed. The area over which the walls extend is about twelve acres, and our remains might conceivably be a village with one or two considerable buildings. It may be presumed that they stood in some relation to the lead mines, but it would be at present mere guess-work, easy and unprofitable alike, to attempt to fix this relation.

### (ii) PONTESBURY

The remains of a dwelling-house were found in November, 1793, at Lea in Pontesbury parish in swampy ground, on the western bank of the Rea brook, and on the north side of the road from Lea to Lea Cross Bridge, close to the hedge. The site is about 300 ft. above sea level in a valley that leads to the upper Severn from Shrewsbury and the north-east and close to the mining district of Snailbeach and Minsterley. Several rooms were opened, but no plan was made. In one was a tessellated pavement about 14 ft. square with an elegant geometrical design in 'white marble,' red brick, and black and red stone, and a grey-green border nearly 3 ft. wide (fig. 34). Three feet lower was a pillared hypocaust, and among the débris were many flue tiles covered with soot, lead-piping, a gutter apparently of stone to carry off water, charred wood and black potsherds. A well and numerous tiles have been found at various places in the parish, and in Shrewsbury Museum is a glass lachrymatory from here. The excellence of the mosaic points to a house of some pretensions, but the 'white marble' is considered by Mr. Fox to be local, probably carboniferous limestone.[2]

[1] Wright, *Uriconium* (1872), 24–8; *Illus. Lond. News*, 13 Sept. 1856, p. 269; 4 Oct. p. 352; *Gent. Mag.* 1856, ii, 500. O.S. Shrops. (6 in.), LV, SW. Tiles and bricks from here were in a temporary museum at Welshpool in 1856; see *Arch. Cambr.* 1856, p. 366.

[2] *Gent. Mag.* 1793, ii, 1144; MS. Min. Soc. Antiq. (6 Feb. 1794), xxv, 75, 226; hence Reynolds, *Iter*; Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), ii, 341; (Ser. 2), v, 230; Shrews. Mus. Cat. in ibid. (Ser. 1), v, 403; Fox, *Arch. Journ.* lii, 44. A drawing of the mosaic was made soon after it was found by Telford, and was reproduced in his *Autobiography* (1828) 23–5, Plate IV; and another copy is to be found in a red portfolio of drawings of Shropshire in the Society of Antiquaries' Library. Apparently the same drawing was published in colours by Haynes of Shrewsbury: copies of this are to be found in Dukes' MS. Hist. of Uriconium (Soc. Antiq. Lib.) and in Gough's Maps of Shropshire, fol. 27*b*, from which our plate is reproduced. A second drawing on a smaller scale was made by Fowler, *Mosaic Pavements* (1804), No. 18; hence Morgan, *Rom.-Brit. Mosaics* (1886), 107. The pavement has since been destroyed.

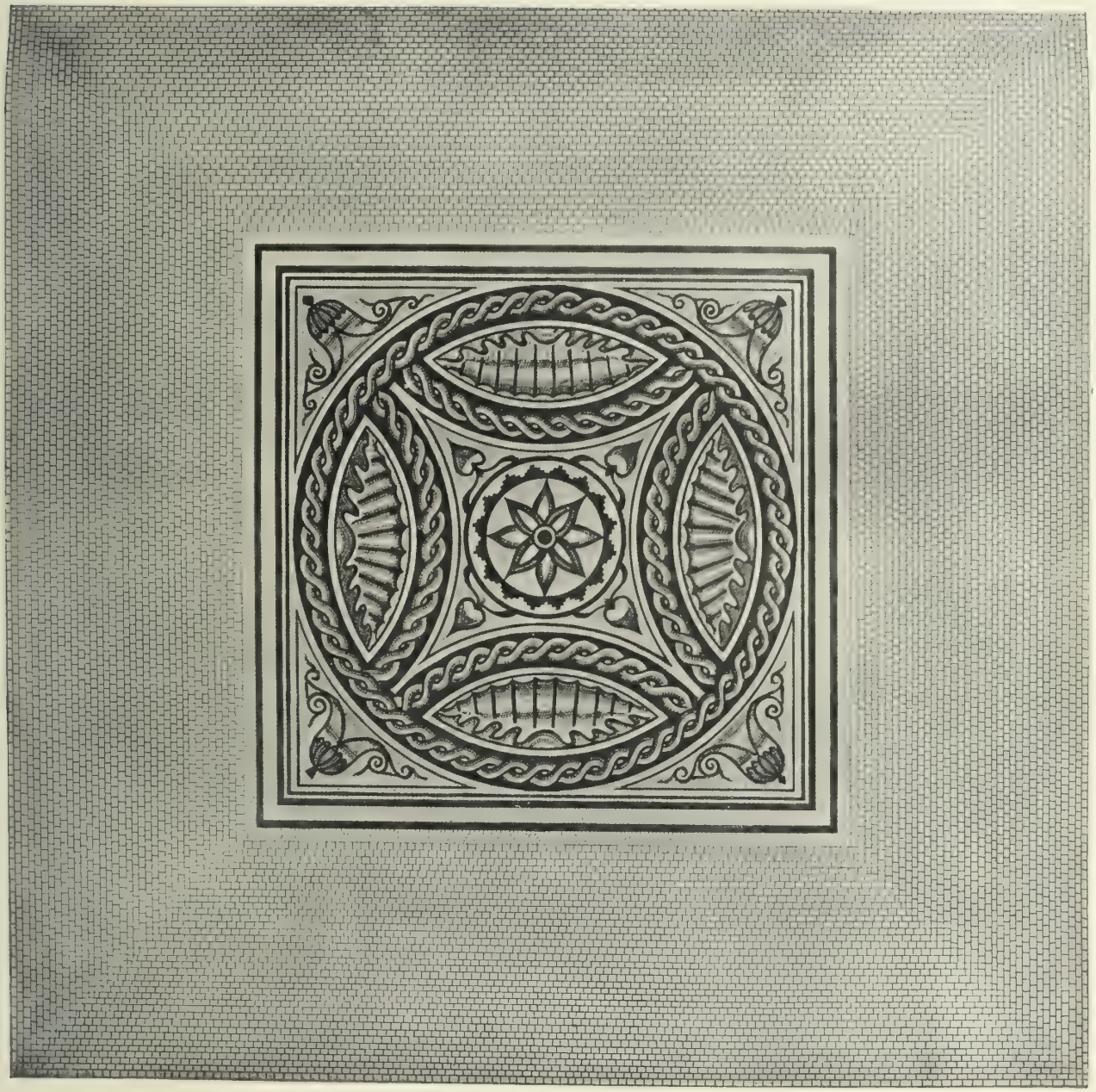

Fig. 34.—Tessellated Floor discovered in 1793 at Lea, near Shrewsbury, coloured Black (dark in the Plate), Red (shaded), Pale Blue and White (light), with a Gray Green Border

(Scale $\frac{1}{25}$·$\frac{5}{5}$)

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### (iii) ACTON SCOTT

A dwelling-house lies on the eastern side of the ridge that divides Ape Dale from Church Stretton Valley, about four hundred yards north-east of Acton Scott Hall, a mile east of the road from Church Stretton to Leintwardine, and not far from the mining district. The site slopes south, and about one hundred yards away is a stream that eventually runs into the Teme.

The house was first noticed in 1817 during alterations of the parish road that runs from the village and railway station to Hatton : much of it was then

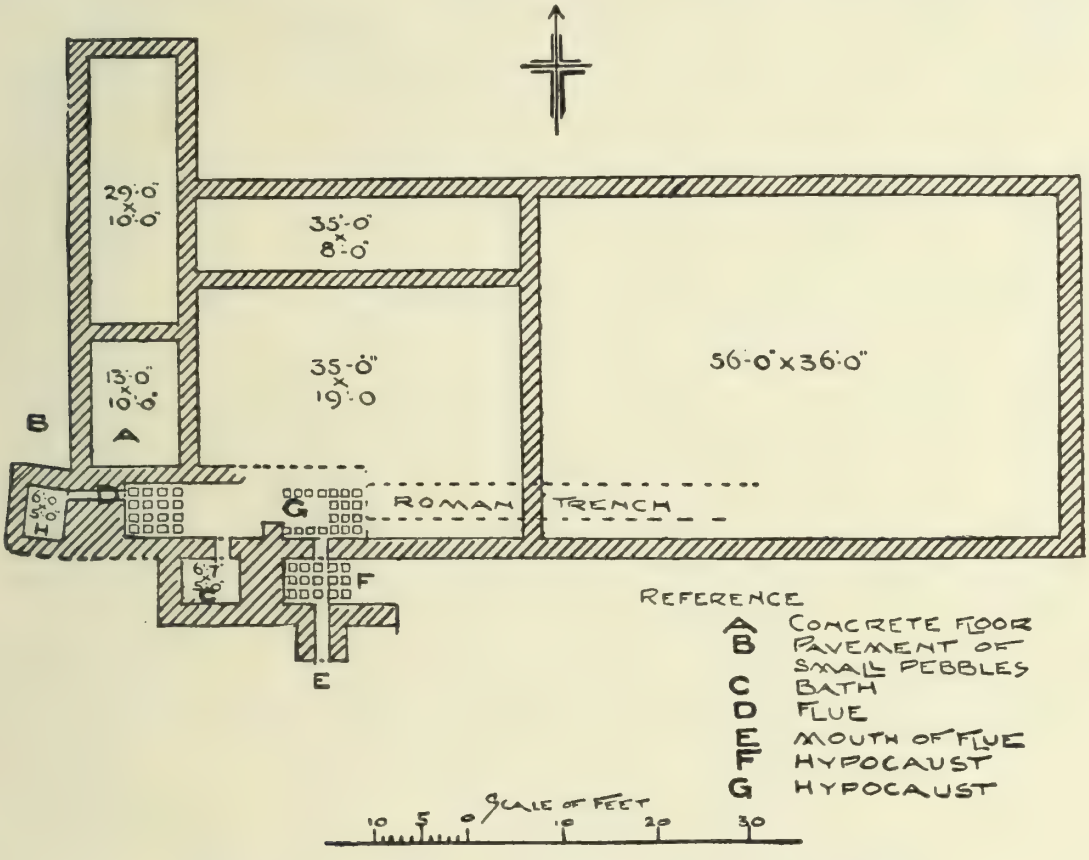



FIG. 35.—PLAN OF HOUSE EXCAVATED AT ACTON SCOTT IN 1844

(Adapted from *Arch.* xxxi)

destroyed. It was re-opened in 1844 by the late Mrs. Stackhouse Acton, and examined in more detail, and a plan was made (fig. 35). We can discern a rectangular building measuring 42 ft. by 112 ft., with extensions to the south and west, containing some nine or ten rooms. The walls were of local sandstone, said to be built without mortar except at the angles and ends, but the mortar was probably destroyed. The walls varied in thickness from 1½ ft. to 2¼ ft., were 20 in. high and made level at the top, though without surviving traces of superstructure. In the south-west corner were hypocausts or flues, probably the remains of baths. From the furnace mouth (E) in the south wall a flue passed north into a room with a pillared hypocaust (F), only part of which was opened and planned, and through it into a second and larger room north (G) also provided with a hypocaust at one

corner. From this room a trench of Roman date was traced for 24 ft. east through the walls of the adjoining room and extended still further. It was 4 ft. wide, and was sunk 2 ft. below the level of the hypocaust floor. It was filled up with large pebbles, but laid at the bottom were some large pieces of half-burnt limestone as if it had been originally made for some purpose now undiscoverable, and, at a later date, had been no longer required and filled up. A small room (C) measuring 5 ft. by 6½ ft., had a concrete floor and wall-plaster painted red and purple on a white ground with the figure of a bird and a branch, in one panel. This opened out of the south side of the large room, but was sunk a foot lower, and was probably a small bath. A room (H) about five feet by six feet had been built, not quite at right angles, on the west end of the large room (G). From the latter a flue was traced into the small room; both it and the walls were much destroyed, but a deposit of lime and soot marked its position, and above it was a floor of flags and tiles, the latter ridged and with holes at one end like roof tiles. Above this layer again was a bed of yellow clay, 4 in. thick, showing the action of great heat, and containing two semi-cylindrical pipes, quite clean inside, with flat tiles, 3 in. thick, covering them. Finally, above all, lay an accumulation of charred wood and soot. Outside this room on the north was a pavement of small pebbles, also covered with soot (B). Among lesser fragments was part of a small sandstone pillar, 3 ft. high, 1½ ft. in diameter, with a mason's mark on it (fig. 36); roof-tiles—some with impressions of shoe-nails and animals' paws—and two tiles for hot-air ventilators; bits of plaster, painted red and purple; iron clamps, a key, parts of a horse-shoe and a spur; black, brown, and red potsherds, bones, and oyster shells.

Fig. 36. Mason's Mark

The following Greek bronze coins are also said to have been found here:—

(1) Neapolis: Obverse, head of Apollo, wreathed. Reverse, a demi-bull, with a human head; emblem of a river. Struck 300–250 B.C.

(2) Andros: Obverse, head of the bearded Bacchus, wreathed with ivy. Reverse, head of Jupiter. Struck 250–200 B.C.

(3) Smyrna: Obverse, head of Apollo with a laurel wreath; the hair arranged like a female head. Reverse (Σ)MYRNA(ΙΩΝ), two-armed hands of a gladiator or athleta, and a palm branch. There had been also the name of the magistrate, not visible. Struck about 150–100 B.C.

(4) Egypt: Antiochus VIII and his mother Cleopatra. Obverse, head of Antiochus, with a radiated crown. Reverse, an Egyptian symbol, known as the lotus ornament, placed on a crescent, and two ears of corn (ΒΑ)ΣΙΛΙΣΣΗ(Σ) (ΚΛ)ΕΟΠΑΤΡΑ(Σ ΘΕΑΣ) ΚΑΙ (ΒΑ)ΣΙΛΕΩΣ (ΑΝΤΙΟΧΟΥ). Struck about 70 B.C.

(5) Smyrna: Obverse, bust of Britannicus, when a boy; under the neck has been inscribed ΣMYR, not now visible. Reverse, a winged figure of Victory holding a palm branch across her shoulders. ΕΠΙ ΦΙΛΙΣΤΟΥ ΕΙΚΑΔΙΟΣ. Struck during the reign of Claudius, about A.D. 45.

The descriptions are quoted as given in the account of the excavations. They are said to have been drawn up in the British Museum. It is obvious that No. 4 should be ascribed to Syria and to about B.C. 125.

With these was said to be also a Roman coin of Mark Antony, minted at Parium in Mysa—obverse A.I.C.V.P. and a lustral vase. Reverse Q.PAQVI . RVF . LEG . C . D ., occupying all the field; apparently Cohen, *Descr. Hist.* i, 47. Type No. 93.

Mrs. Acton was very certain that these coins were found on the spot, and that there was no imposition. But unless we have here to do with some Romano-British coin-collector—a convenient but dangerous supposition—it is hardly possible that such early Greek coins could have been found at Acton Scott in Roman times. In many other cases where finds of early Greek coins in Britain have been recorded, inquiry has proved an error. It may well be that, if we knew the facts, we should find that workmen or others had 'salted' the excavations. No other coins are recorded.

The house seems to belong to the very simple type that merely contained three or four living rooms, heated with hot air, and probably provided with baths, and store rooms or barns or stable adjoining them, and formed with them a small rectangle without any corridor (p. 212). But the excavations were not complete.[3]

### (iv) RUSHBURY

In 1850 or 1851 Roman masonry and tiles were found in a field south of the church, and perhaps may mark the site of a dwelling-house—rather than of a fort or a town, as has been supposed by many antiquaries. Gough records Roman coins from here, and supposed it to be Bravonium, and Hartshorne, though unsuccessful in tracing any remains or coins, considers the existence of the earthwork and an absurd name derivation to be sufficient evidence for placing Rutunium here. He also traces a road from here to Pitchford, which is devoid of any real evidence (p. 273).[4]

### (v) YARCHESTER

Traces of 'very extensive buildings' have been found in a field at Yarchester Cot, south-east of Harley, near the road from Shrewsbury to Wenlock, and immediately south of Wigwig, and fragments of Roman tiles and pottery are to be picked up on the surface. If excavations were undertaken here they would almost certainly reveal the site of a dwelling-house.[5]

### (vi) OAKENGATES

Pennant and the Rev. Mr. Dickinson, rector of Blymhill, thought they saw here the ruins of a hypocaust in 1766, and a few coins have since been found. The site lies on the Roman road from Wroxeter to London, com-

[3] Main account in *Arch.* xxxi, 340; *Proc. Soc. Antiq.* (Ser. 1), i, 73, hence Wright, *Uriconium* (1872), 30–34; Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), ii, 341–2; O.S. Shrops. (6 in.) lxiv, NW. On Greek coins found in this country compare Haverfield, *Num. Chron.* (Ser. 4), vii. Wright's idea (*Uriconium*, 33) that the coins may have come to Acton Scott with some early settler from Greece, who 'brought with him the coinage current in the eastern archipelago,' is not tenable. Four of the six coins must have long passed out of circulation in the East before the Romans conquered Shropshire. It should be added that the six coins cannot even have been in circulation together at any one time or place.

[4] Gale, *Iter* (1709), 127; Camden, *Brit.* (ed. Gough, 1806), iii, 460; hence Reynolds, *Itin. Brit.* (1799), 460; Dukes, *Antiq. of Shrops.* (1844), 269; Hartshorne, *Salopia Antiqua* (1841), 140, 149; hence Wright, *Uriconium* (1872), 18; Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), ii, 345; Anderson, *Hist. Shrops.* (1844), 269.

[5] Wright, *Uriconium* (1872), 35–6; hence Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), ii, 339. Shrewsbury Museum has some tiles from here.

monly called Watling Street, and as its distance from Wroxeter roughly agrees with that of Uxacona from Uriconium, as mentioned in the *Itinerarium Antonini*, it has generally been accepted by antiquaries as the site of this 'station.' The assumption is partly based on the similarity between the two names ; the derivation, however, of Oakengates from Uxacona is uncertain, and even the correct reading of the latter name is doubtful. Therefore, it seems best to leave the question unsettled, until at least the earlier forms of Oakengates, or more definite archaeological remains, have been found.[6]

### (vii) UNCERTAIN

Two sites have yielded remains which may conceivably belong to a Roman villa. But in neither case is the evidence at all conclusive and we cite it only for future explorers to expand or demolish.

(*a*) A building of some kind was found at Weston, just north of Bury Walls, and close to the traces of the Roman road from Wroxeter to Chester. The account of it is as follows : 'About fifteen years since (i.e. about 1815), on digging up a mound at Weston, the foundations of a small oblong building were discovered. The walls were double ; in the space between them, bones are said to have been found.' The building was considered by Wright to be the remains of a 'villa.' The description suggests two rectangular inclosures, one within the other, and this would not fit well with the plan of a 'villa.' But the building is not definitely known to be Roman, and, until it has been further excavated, it must remain among the large number of doubtful finds.[7]

(*b*) Tiles and tufa, said to be Roman, occur in the church walls of Broughton, near Clive. If Roman, they may indicate a dwelling-house in the neighbourhood.[8]

(*c*) We may here note also a significant name, Stanchester, in the parish of Berrington, near Condover. This name occurs in a deed of which we have not been able to ascertain the date ;[9] it is plainly a local name and apparently, from the context, near the Cound Brook and therefore near the Roman road connecting Wroxeter with Leintwardine. No Roman remains seem to have been noticed here. The word *Chester* usually denotes Roman sites in England south of the Tyne, but in a few cases it appears to be used at places not occupied in Roman times, and in the present case further inquiry seems desirable.

[6] Dickinson's letter quoted by Shaw in *Gent. Mag.* 1796, i, 111, and *Hist. Staffs.* (1798), introd. 31 ; hence Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1, 1879), ii, 339 ; hence Ibid. (Ser. 2), xi, 165. For the derivation we have had information from the Principal of Jesus College, Oxford ; see also A. Holder, *Alt-Celtische Sprachschatz, Uxacona.* The dates of the coins said to have been found here are not recorded.

[7] *Antiq. of Hawkstone* (published about 1829 by Eddowes of Shrewsbury), 53 ; hence Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), ii, 343 ; Wright, ibid. (Ser. 2), xi, 165. As the site of Rutunium see p. 269, note.

[8] *Shrews. Chron.* 4 Sept. 1874 quoted by Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1, 1879), ii, 343. Lee (*Arch. Cambr.* [Ser. 4], v, 205), following Reynolds and Hoare, places Rutunium here, but this seems improbable. See p. 269.

[9] Blakeway MSS. (Bodleian Library), ii, 69 ; cf. iii, 10.

## 5. Mines

### (i) lead

The lead-mining district of Shropshire lies on the south-western border of the county, where hills run out in a north-easterly direction from the Radnorshire upland. Lead is (or was) found especially in Hope Valley and along the slopes of the Stiperstones and the Corndon Hills, between Pontesbury in the north-east and Snead in the south-west—a space about nine miles long and from four to six miles broad. The richest and most productive veins occur in the centre of this area, round Shelve and Minsterley. They have been worked in all periods. It is certain that the Romans extracted lead from the Shropshire mines as from others in Great Britain. This is primarily attested by the discovery in the neighbourhood of five pigs of lead, one, or possibly two, found at Minsterley, a third near Bishop's Castle, a fourth and a fifth at Snead. In addition, old workings, supposed to be Roman, and so called locally, have been found on the west side of Shelve Hill near the top of it above the 'White Grit' mines, where seven or eight veins of lead crop out of the surface, and further north up the side of the hill behind the Gravel mine. These old workings are chiefly open cuttings of the most various widths and depths. In one case two or three parallel veins were actually followed right up the side of a hill from the bottom to the top. But on the same hill top, where the ore was further from the surface, large caverns were hollowed out with galleries running in all directions. At other places the lead was sought from even greater depths. Shafts were sunk to a considerable depth and galleries of some length opened out, as in the mines now called the 'Roman Gravel mines.' There is no doubt that these workings are very old and primitive in character ; whether they are actually Roman is another matter. However possible or even probable this may be, definite proof is lacking. The lead was no doubt first mined by the Romans, but the mining was continued by later men, often probably on the same spot. Thus the work of the earlier date must often have been obliterated by that of the later. The methods, too, of the later miners are not known to have been much more advanced than, or indeed to have differed much from, those of their Roman predecessors, so that it is impossible to distinguish clearly between them or to state that such and such mines are Roman or are mediaeval. To do that we need to find pigs of lead and tools definitely known to be Roman or mediaeval in the actual galleries of the mines. The presence of Roman pigs, pottery, and coins among the rubbish outside the mines proves nothing definite, since they may have been cast there by later workers, who made the now visible mines, or they may denote a place of smelting rather than of mining. In fact, one pig was found at Snailbeach near Minsterley, in smelting slag. The tools—picks and oak spades—so often said to be Roman have no special features that justify us in calling them such. They are old and were found in old workings ; but their date is as uncertain as the workings themselves. The evidence to be derived from the Roman inscriptions on the pigs does not enlighten us much. We learn that mining was active in the first half of the second century, and that the mines were, as always,

imperial property. All the pigs bear Hadrian's name, and perhaps we may argue from this uniformity that the mines were worked only in Hadrian's reign; but we can assign no reason why mining should not have begun earlier or why it should not have continued longer. Nor can we quote dateable evidence of Romano-British life in the mining district which might aid us to check the uniform series of Hadrianic inscriptions. We can only point out that the traces of inhabitation at Linley Hall and Pontesbury may be connected with the mines, and we may wonder that we know of no track leading to them or to the mining area from any known Roman road or site.[1]

### Inscribed Pigs of Lead Found in Shropshire

1. Found 'in 1767, a foot below the surface of the earth, on a piece of land about 3 miles north-west of Bishop's Castle,' according to a writer in *Gent. Mag.* 1798. Once at Linley Hall (3 miles north of Bishop's Castle): now lent by Mr. More to the Birmingham University Geological Museum. Weight 190 lb. 6 oz.; size 7 by 22 in. on the larger face, $3\frac{1}{2}$ by 20 in. on the smaller (inscribed) face. The surface is said to show traces of having been cast in a mould made from an oaken model. It bears two inscriptions, one (as usual) on the smaller face, in large letters standing out of a sunk panel

IMP HADRIANI AVG

*Imp(eratoris) Hadriani Aug(usti)*

'The lead of the Emperor Hadrian,'

the other in small letters, twice repeated, in a small label, $\frac{1}{2}$ in. long, sunk in the rim which surrounds the larger inscription, and apparently stamped when the lead was warm and soft.

MIИB (*or* P)

The sense of this is unknown; it is probably a smelter's or assayer's mark.

The find-spot involves a small doubt. The oldest account, cited above, places it 3 miles north-west from Bishop's Castle, and, therefore, not far from Linley Hall, where it was long preserved, and not far from the find-spot of the Snead pig (No. 4). This account is quite coherent and credible. It is not, however, the usual account. Murchison in 1839 suggested that the lead from which it was cast had been extracted from ancient workings near the Gravel Mine at Shelve, 7 miles north from Bishop's Castle; Wright improved the idea by saying that he believed it had been found there, and from him Way and Hübner and nearly all the other writers have taken their accounts of the origin of the pig. Wright appears, however, to have had no real reason for his statement, except what he considered the general probabilities of the case. These cannot weigh against the definite and credible statement in the *Gent. Mag.* account.

First published *Gent. Mag.* 1786, ii, 924 (with illustration); R. I. Murchison, *Silurian System* (London, 1839), 279 (text incorrect); Wright, *Illustrated London News*, 1856 (ii), 352, with cut, ascribing wrong date to find. Hence Way, *Arch. Journ.* xvi, 32; Newton, *Mon. Hist. Brit.* 120, 139, hence Hübner, *Rheinisches Mus.* 1857, p. 358, and *Corpus Inscr. Lat.* vii, 1209*a*, and Watkin, *Shrops. Arch. Journ.* 1879, ii, 351. From Murchison, Phillips, *Yorks. Philos. Soc.* 1855, p. 89; from Wright, Cochet, *Bulletin Monumental*, 1856, p. 408. Numerous brief notices by Wright, *Intellectual Observer*, i (1862), 299 (reprinted *Shrops. Arch. Soc.* 1888, xi, 277); *Uriconium* 28, with cut; *Brit. Arch. Assoc. Journ.* xiii, 175; xvii, 213 (inaccurate); Roberts, ibid. xvi, 350. None of the cuts show the smaller inscription. Seen by myself.

[1] For the lead mining area see R. I. Murchison, *Silurian System* (1839), 279 seq. For a description of the old workings, Wright in *Illustrated London News*, 1856 (ii), 351, 352; *Intellectual Observer*, i (1862), 301 (reprinted *Shrops. Arch. Journ.* xi (1888), 277); *Brit. Arch. Assoc. Journ.* xvii, 212, with inaccurate account of the finding of lead pigs; and *Uriconium*, 49–52. Hence, Watkin, *Shrops. Arch. Journ.* 1879, ii, 351, 352. Hartshorne, without any evidence, asserts a Roman origin for some half-molten ore with charcoal imbedded in it, found on the top of Ponsert Hill near Pontesford, *Salopia Antiqua* (1839), 548. For oak spades see the above accounts and also *Illustrated London News*, 1856 (ii), 405, 505; Way, *Arch. Journ.* xvi, 33. Two spades belonging to Mr. More of Linley have been lent by him to Birmingham University, and are now with the Linley pig in the Geological Museum. Similar spades have been found in Derbyshire lead mines at Hucklow; see *V.C.H. Derbyshire*, i, 258. Some candles found in the mines, with stems of tallow, changed by time into adipocere, and wicks of flax, are called Roman by Wright (*Uriconium*, 266), but without any real proof.

2. Found (according to a letter written by a Mr. Frowd in 1827), 'about 1775, near Aston Farmhouse, on the Roman road leading from Elland's turnpike, which stands on it, to the Gaer, near the Severn,' and, apparently, near a Pentre Cwm, where traces of a 'Roman smelting-place' were thought to have existed. It was once in Probert's Museum at Copthorne, but was sold in 1827 and disappeared. It was inscribed, Frowd tells us, with the name of Hadrian, and another antiquary, who saw it about 1827, a Mr. Bowers, adds that it was smaller than the Linley pig (No. 1), and bore also 'the legionary stamp LEG XX.'

Letter from Isaac Frowd to R. B. More of Linley, 15 October, 1827, and information given by Mr. Bowers of Shrewsbury to Mr. Way, both quoted by Way, *Arch. Journ.* xvi, 33. The find-spot is uncertain. Way places it at Aston, near Westbury, on the ancient road from Shrewsbury to Montgomery. But Aston, near Snead, fits the description better. This is on a road from Heblands (? Ellands), near Bishop's Castle, to Montgomery and the Gaer near the Severn, and close to it is a Pentre Cwm. From Way, Hübner, *Corpus Inscr. Lat.* vii, 1209*b*, and Watkin, *Shrops. Arch. Journ.* 1879, ii, 351. Hübner prints the inscription as IMP · HADRIANI · AVG. This is likely enough, but it is not actually recorded as the exact lettering of the object.

It is unfortunate that the legionary stamp LEG XX is not better attested. In itself it is not at all improbable. Soldiers were certainly used in the working of mines and quarries under the Roman Empire, and the Second Legion has left its name (L · II) on a pig of lead which was dredged up in the harbour of St. Valéry-sur-Somme on the north-west coast of France, and which may be accepted as mined on Mendip.[2]

3. Found in 1796 or 1797, near a farm called Snailbeach and a very ancient lead mine, in the chapelry of Minsterley and the parish of Westbury; given in 1798 to the British Museum, where it still is. Weight 193 lb., dimensions identical with the Linley Hall specimen. Inscribed

IMP · HADRIANI · AVG

Ellis, *Brit. Mus., Townley Gallery* (Library of Entertaining Knowledge, 1836), ii, 291, woodcut; Way, *Arch. Journ.* xvi, 32, with additional information; Hübner, *Corpus Inscr. Lat.* vii, 1209*c*. From Ellis, Yates, *Somers. Arch. Soc.* viii, 14, and Newton, *Mon. Hist. Brit.* 120, 139; from Way, Watkin, *Shrops. Arch. Soc.* 1879, ii, 351. Brief mention by Wright, *Intell. Observer*, i, 299, reprinted, *Shrops. Arch. Soc.* 1888, xi, 277. Seen by myself.

4. Found May, 1851, 3 ft. below the surface, in draining a field 'below a large entrenched camp called the Roveries,' in the parish of Snead, about three-quarters of a mile north-east of the church and a mile west of Linley Hall. Until 1856 in possession of Philip Norris, esq., of Hurst, near Clun; now in the Mayer Collection in Liverpool Museum. Weight, 185 lb.; dimensions, 7 in. by 22 in. on the larger face, 19½ in. long on the smaller inscribed surface, and therefore very similar to the other pigs of this region.

IMP · HADRIANI · AVG

First published by J. Cove Jones, *Soc. Antiq. Proc.* (1st Ser.), ii (1852), 204, 205; inscription incomplete; more details as to place of find are given by Wright, *Illustrated Lond. News*, 5 October, 1856; from these, Way, *Arch. Journ.* xvi, 34, Hübner, *Corpus Inscr. Lat.* xii, 1209*c*, and Watkin, *Shrops. Arch. Journ.* 1879, ii, 351. Brief mention by Wright, *Intell. Observer*, i (1862), 299 reprinted *Shrops. Arch. Journ.* 1888, xi, 277, and *Uriconium* (1872), 28. Seen by myself; information from Mr. Entwistle of Liverpool Museum.

5. Found in 1851, 'in sinking through a slag-heap of smeltings' in Minsterley; now lost. Weight, 173 lb.; dimensions, 20 in. long. Inscribed

IMP · HADRIANI · AVG

Samuel Bagshaw, *Hist. and Gazetteer of Shrops.* (Sheffield, 1851), 678, is the only authority; hence Way, *Arch. Journ.* xxiii, 279, Hübner, *Corpus Inscrip. Lat.* vii, 1209*f*, and Watkin, *Shrops. Arch. Journ.* 1879, ii, 352. Way notices that another pig was found in 1851 at Snead, and suspects a possibility of error. But, as he adds, the dimensions of the two pigs differ. Bagshaw's volume is unfortunately an inaccurate and careless compilation. It is quite conceivable that, as he was going to press in 1851, he received an incorrect notice of a recent find which he did not trouble to verify, or confused, in point of site, with an earlier Minsterley find (No. 3 above). The probability of this view is enforced by the fact that no one but Bagshaw seems ever to have had any information of the find, and the pig itself has never been otherwise heard of.

[2] Haverfield, *Arch. Journ.* xlvii, 258.

### (ii) COPPER

Two copper-mining districts exist in this county. The larger lies in the same direction as the lead district, but slightly to the east of it, between the Stiperstones and the Longmynd, and extends much further north-east, reaching from Norbury and Wentnor in the south-west to Lyth Hill, and thence north of Shrewsbury from Pradoe and Nesscliffe by Clive and Hawkstone to Market Drayton. Here no certain Roman remains have been found, except a few coins at Ratlinghope. The alleged but very doubtful traces of Roman mining, said to have occurred at Clive, and the grotto in Hawkstone Park, provide but scanty reasons to think the Romans worked here. The smaller district is at Llanymynech, to the west of Nesscliffe and on the borders of Montgomeryshire, and this has yielded definite evidence of early mining, and of inhabitation in the Roman period. Here are ancient workings, as in the lead district, which are said to be Roman. Twenty or thirty shallow pits, shaped like inverted cones, have been dug out in ancient times on the surface of the north-west side of Llanymynech hill, and the rubbish from them still abounds in ore. There are traces, too, of rude smelting hearths, and a large cavern (called 'ogo' in Welsh) has been found, whose passages or galleries, sometimes 200 yards long and 1 to 3 yards wide, branch off according to the direction of the veins, and end in small holes, as if the metal had been 'worked in strings' and picked out clean with hammer and chisel; traces of chisel-working could indeed be seen all along the rock. Similar shallow pits and smelting hearths occur in the copper district at Alderley Edge in Cheshire, and have yielded quite early remains, such as stone hammers and flint implements, and also an iron pick and some oak spades, like those found in the Shropshire lead mines, which may be of almost any age. Apparently the Cheshire ore was not worked in mediaeval or modern times until the sixteenth or seventeenth century, and then different methods of mining were employed, which can easily be distinguished from the earlier workings. No early tools have been found in Shropshire at Llanymynech. But the cavern or 'ogo' there was probably used for inhabitation in the second century, A.D.; many coins of Faustina and Pius were found in 1755, with a small hatchet and 'culinary utensils,' near a fireplace in it, and at the same time several skeletons, one with a bracelet of glass beads on its left wrist and a 'battle-axe' by its side. Fifteen years later, more skeletons —one with a 'golden bracelet'—were discovered. Burnt bones and ashes were noticed on the hill-side about 1781, and, later still, more skeletons, one with a ring still on its finger bone. In one case, a man, woman, child, dog, and cat had all been buried together. Many coins, perhaps a hoard, chiefly of Constantinian date, were washed down the hill in a clod of earth about 1815, and bones, coins of all dates, from the beginning to the end of the period, and other signs of occupation have been, and are, found hereabouts. Wright records that Mr. Pidgeon of Shrewsbury had 20 copper coins 'obtained here, ranging from the early emperors to a tolerably late period.'

This evidence suggests that the ore was rudely mined and smelted in quite early times, and perhaps at the very beginning of our period, if not before it. No inscriptions, lumps of metal, or definitely Roman mining

implements[3] exist to show whether this went on during Roman times. It seems more certain that, after the mining ceased, the district was inhabited by a rude population that lived, and even buried their dead, in the disused mines during the second or third century, if not later. It is possible that this people continued to work the mines in their own fashion; but about this matter, and indeed of the whole industry, our knowledge is as inadequate as it is of the earliest Cornish tin mines, and it is as dangerous to surmise.[4]

## 6. Roads

The Roman roads of the portion of our island to which Shropshire belongs are in their outlines fairly simple. A main road from London and the south-east ran across the Midlands to Wroxeter, and from this centre three roads carried communications further. One led north and north-west to Chester and gave access to North Wales and the regions of Lancashire and Cumberland. A second conducted the traveller south to South Wales and the great fortress at Caerleon-on-Usk. A third plunged westwards into the hills. These general features are both simple and well established. Difficulties only arise when we enter into details. The precise course of the route to Chester, the precise goal of the western road, and the existence and direction of several branch roads, are difficult problems which have vexed in vain the souls and pens of many antiquaries, and the access to the lead mines is another as yet unsolved puzzle. It may be convenient to begin our discussion by stating the literary evidence supplied by the roadbook of the Roman Empire, the so-called *Itinerarium Antonini*, which includes three of the four roads mentioned above, and then take the roads themselves each in turn and indicate how far they can be traced on the ground by the evidence of existing roadways or of place-names and the like, and to consider the chief supposed branches.

The evidence of the Itinerary can be stated shortly. We need only preface that thirteen Roman miles approximately equalled twelve English ones, and that the distances are here given, as in the original document, in Roman miles.

(1) Part of a route leading deviously from Carlisle to London and the Kentish ports—Deva to Bovium 10 miles, Bovium to Mediolanum 20 miles, Mediolanum to Rutunium 12 miles, Rutunium to Viroconium 11 miles, Viroconium to Uxacona 11 miles, Uxacona to Pennocrucium 12 miles, Pennocrucium to Letocetum (this, not Etocetum, is the correct spelling) 12 miles.

(2) Route from the fortress at Isca to Viroconium. Isca to Burrium 9 miles, Burrium to Gobannium 12 miles, Gobannium to Magna 22 miles, Magna to Bravonium (thus best spelt) 24 miles, Bravonium to Viroconium 27 miles.

We now pass on to the individual roads and their traceable remains.

[3] Two iron picks (once in Shrewsbury Museum, now lost) have been called Roman, but there is no evidence to prove their date.

[4] Pennant, *Tour in North Wales in* 1781 (ed. 1883), iii, 205; W. Davies, *Cambrian Reg.* 1795, i, 271, hence Hartshorne, *Salopia Antiqua*, 60; Aiken, *Journ. of a Tour* (1797), 6; Nicholson, *Cambrian Guide* (1808), 356, (1813), 817; Price, *Old Oswestry* (1815), 157; R. I. Murchison, *Silurian System* (1839), 275. From these, Wright, *Intell. Observer*, i (1862), 304 (reprinted in *Shrops. Arch. Journ.* 1888, xi, 272), *Uriconium*, 52; Watkin, *Shrops. Arch. Journ.* 1879, ii, 352. For Cheshire mines see Roeder, *Lancs. and Ches. Antiq. Soc.* xix (1902), xxiii (1906). The coin figured in *Salopian*, ii (23 June, 1817), is not Roman. Shrewsbury Museum has a 'minim' from here.

### (*a*) PART OF THE ROAD FROM LONDON TO WROXETER

This road is easily traced. Most of it is in use to this day with only occasional divergencies. It is known, and has since Saxon days been known, as Watling Street. Its course, in general, unwaveringly straight, marks it as Roman, and its origin is further proved (if proof be needed) by its relation to Roman sites, its frequent coincidence with early boundaries of shire and parish, and the occurrence of names like Stretton or Stratford along its way. It enters the eastern edge of Shropshire near Stoneyford and Weston under Lizard, and for a few hundred yards forms the county boundary. Its course is due west, past the slight eminence of Red Hill (which may have been used by the Roman engineers in laying out its direction) and Oakengates to the north foot of Wrekin, where it begins to bend distinctly south-westwards in order to reach Viroconium. At Oakengates was probably the 'station' of Uxacona, already noticed (p. 261). Occasionally the modern road diverges from what appears to have been the Roman line—at Oakengates, for about 600 yards, to gain an easier gradient; at Haygate, on the south side of Wellington, perhaps owing to the needs of the modern town; and at Overley Hill, again for an easier slope. As it neared Viroconium, it traversed a Roman cemetery, which was partly excavated in 1861. A discovery then made suggests that its precise line lay some sixty to eighty feet south of the present lane called Watling Street (p. 240, fig. 18). It doubtless entered Viroconium by an eastern gate, not yet fully traced.[1]

No proper account of the stratification and materials of this road exists for the Shropshire part of its course. Stukeley[2] describes it as

> laid very broad and deep with gravel not yet worn out, where it goes over commons and moors. It is raised a good height above the soil and so strait that upon an eminence, you may see it ten or twenty miles before you, and as much behind over many hill-tops, answering one the other as a visto of trees.

### (*b*) VIROCONIUM TO DEVA (CHESTER)

Clear as Watling Street is as far as Wroxeter, its continuation north towards Chester is very puzzling. Of the fact of the continuation there can be no doubt. Strategic and commercial reasons demand it; the Itinerary mentions it; evidence of the road still exists close to Wroxeter and to Chester, and a broken milestone marks its course halfway. Unfortunately the Itinerary gives us little clue. It assists to prove the existence of the road; it involves its precise course in Stygian darkness. The actual distance between Wroxeter and Chester is about 40 English, that is, 43 or 44 Roman miles. The Itinerary distance is 53 Roman miles. We must conclude either that a superfluous unit has strayed into the text—for instance that Bovium was x m.p. instead of xx m.p. from Mediolanum—or that the route somewhere deviated from the natural straight line. Not one of the three stations between Wroxeter and Chester—Bovium, Mediolanum and Rutunium—has been identified with

[1] O.S. (6 in.) xlii, NW.; xxxv, SW., SE.; xxxvi, SW., SE.; xxxvii, S.W., SE. For the east gate see Fox, *Arch. Journ.* liv, 127, note.

[2] *Itin. Cur.* (1776), i, 60; writing of the section between Stoneyford and Wall in Staffordshire.

any kind of strong probability. We must therefore proceed to track the road by the faint traces visible on the surface. Leaving Wroxeter by the north gate and traversing a cemetery, we can follow it by cart roads and field paths past Norton and Uckington and Duncot, where it crosses the Tern by the Great Western Railway bridge ; then, with a slight trend eastwards, it is indicated by hedges and the parish boundaries of Withington and Upton, as continuing northwards and passing half a mile west of Roden Hall. At this point comes a gap in the trail, but it reappears (as it seems) near Poynton Grange, Little Wytheford and Shawbury Church, coinciding first with hedgerows, then with a lane, and finally with the high road from Shawbury to Wem as far as Moreton Corbet. Hence it is indicated running north by a field path on a slight ridge which brings it to a crossing of the Roden near Harcourt Mill ; then it seems to follow the hedge bounding Harcourt Park on the west, and after passing Moston climbs the western extremity of Hawkstone ridge just where a modern road and parish boundary also cross, and reaches a spot called Holloway. Near Moston we have a little definite evidence. In 1812 parts of two Roman milestones incribed IMP CAE and MP were found in a shallow pool lying on a bed of gravel (perhaps the ancient roadway) amidst peat ; later on, in draining the moor a little north of Moston, traces of a road 9 ft. wide were detected in six or seven places. And somewhere perhaps in this neighbourhood we may provisionally place Rutunium. The distance from Wroxeter—11 Roman miles—suits, and the name may well be connected with that of the Roden stream.[3] But from this point northwards great obscurity overhangs the line of our road. For nearly seventeen miles no trace can be detected. This is not surprising. The whole region through which it must have run is full of marshes and small meres, while the Dee and its tributaries are wont in flood time to overflow for miles. Two lines can be suggested for the road. Local tradition ascribes a Roman origin to a lane which runs from Shocklach to Witrein's Farm near Stretton. A better line lies rather further east. Place-names like Pepper Street—i.e. paved street?—west of Prees ; Platt Lane and Stretton (a few miles east of Holt) and—though less clear evidence—finds of coins at Stretton and Chorlton, indicate a line running somewhat north-west from Weston, and passing between Whitchurch and Fenn's Moss and near or a little west of Malpas. Such a line would avoid the worst bogs of the district and the gorge of the Wych Brook, while it would nowhere climb much above 300 ft. But the whole is so uncertain that we can only indicate possibilities. Fortunately, as we get into Cheshire, clearer traces meet us. The name Stretton, the traces in paths and field divisions between Morrislake Bridge (near Farndon) and the old ford at Aldford, where traces of a Roman bridge across the Dee are said—perhaps conjecturally—to have been detected, lead on to Eaton Park, where a piece of the road was actually found in making the lake, and to Eccleston, where the line can still be seen, some-

[3] Many other sites have been suggested for Rutunium—such as Rowton, Ruyton of the XI Towns and Bury Walls. But nothing Roman has been found at Rowton or Ruyton, and Bury Walls, a mile-south east of Weston, not only is off the line of the road, but its earthwork is not Roman, and some coins and rather doubtful bricks seem to be the only definitely Roman objects ascribed to the site ; see Topog. Index, Hawkstone. The building at Weston also has not yet been proved Roman, see p. 262. Two of the pieces of milestone measured 4½ ft. long, 1 ft. broad, and 4 ft. long ; *Antiq. of Hawkstone* (about 1829), note by Blakeway, p. 88—also in his MSS. in Bodl. Lib. xvii, 26, giving slightly different sites and a not very intelligible sketch ; hence *Ephemeris Epigr.* iv, No. 692.

times coinciding with, and sometimes in the fields beside, the present Eccleston and Chester road. So, crossing the Dee, near but not exactly at the site of the present old bridge, we enter the south gate of Deva.[4]

### (*c*) WROXETER TO CAERLEON

Far fewer problems attend the course of the road leading from Wroxeter to South Wales, and in particular to the fortress of Caerleon. There is, indeed, some doubt as to its exact point of departure. It probably left Wroxeter by the south gate and crossed the Severn by a bridge, or a ford, or possibly both. But neither the gate nor the bridge has been actually found. A ford exists opposite a lane leading from the churchyard gates. But a ford can hardly have provided the only means of crossing a river which flowed so close to the town, and which rises so often and so rapidly as the Severn. Perhaps we may suggest that a bridge stood where the river narrows slightly a few yards below the ford. On the other or western bank the only surviving hint of a Roman road is supplied by a lane which runs from the ford straight south-west to the Shrewsbury and Wenlock road, and is continued in the same straight line by a footpath as far as the road to Upper Cound. Here the direct line stops, but if we follow a lane which bends southwards for half a mile to Coundstank, we regain there a line of road running due south-west, parallel to the line of the road from the ford. We may guess that these lines represent the Roman road which here perhaps made a detour. Reasons for this detour can be found in a bog, a hill, and a sharp descent to the little gorge of the Cound brook, which would block a direct continuation of the road from the ford. On the other hand, there would have been no difficulty in taking a road direct from Coundstank to the ford, and the object of the bend is not at all clear from the point of view of one approaching Wroxeter from the south. The precise line of the road at this point must be left uncertain. From Coundstank the line is clearer. It can be followed straight along field and parish boundaries to the Cound brook, and thence, after climbing the steep southern bank of the streamlet, along the Stretton road, ascending gradually all the way. This it leaves a little further on, follows a footpath across fields for a mile, passes Pitchford—so called from a bituminous well, not from any paved road—crosses two roads to Acton Burnell, takes a cart road to a stream and then a field path up a hill to the Stretton road once more. Here it turns more west and leaves the Severn to enter a deep valley between the Long Mynd and the Caer Caradoc Hills—a route still used by modern railway and road. The Stretton road takes it through Frodesley, Frodesley Lane, and Longnor Green, where a parish boundary also marks its course, past Hollyhurst, Heath Cottage, and The Leasowes, and by the side of the railway line to Church Stretton station, turning first south and then west. From the station we trace it along a rough lane to Little Stretton, skirting Raglett

[4] O.S. Ches. (6 in.), liii, NE.; xlvi, SE., NE.; xxxviii, SE.; O.S. Shrops. (6 in.), xxii, NW., SW.; xxix, NW., SW.; xxxv, NW., SW.; xlii, NW. Dr. Mason traced this road for ten miles north from Wroxeter to Holloway Mouth and Prees, and it has been re-examined for this work; Shaw, *Hist. Staffs.* (1798), i, Introd. pp. 13–15; Horsley, *Brit. Rom.* (1732), 418–19; Stukeley, *Itin. Cur.* (1776), i, 59, 60; ii, 23. Lee, *Arch. Camb.* (Ser. 4), v, 206–15; vi, 164, traces many roads which do not seem to be Roman; Wright, *Uriconium* (1872), 11; Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* 1879, ii, 355–63; *Roman Ches.* (1886), 47–55.

Hill where, as the valley narrows, it reaches its highest point. It is then lost in the meadows for a short distance, but reappears on the main road to Bishop's Castle, running almost due south and then south-east to Marshbrook railway station. It crosses the Marshbrook, turns south-west and ascends the bank of a deep ravine, climbs up a ridge at the top of Church Stretton valley, and descends into the top of Ape Dale, reaching Bushmoor by a field-path. It turns south again to cross the Onny at an easy point, following the modern road through Wistanstow to Leamore Common, where it forms the hedge line of some cottages. It crosses the Onny at Stretford Bridge, and a quarter of a mile further on resumes its south-westerly direction as it approaches the Clun valley. It leaves Craven Arms to the east, and, after Sallow Coppice turns more south, ascends a small ridge near Rowton and turns still more south at Shelderton, and by lane, field path, and high road, makes straight for Leintwardine, leaving the county near Marlow and Hollow Blagdon. Leintwardine is probably the site of Bravonium, though the Roman remains there are less clear than is sometimes stated.[5]

A section cut across the road at All Stretton showed a stratum of gravel 8 in. thick, based on a layer of large local stones, about one foot deep. Its surface was 16 ft. wide, but at the edges it was very thin, as if spread out by wear or ploughing, and originally it was probably only 13 ft. wide. It seemed usually to be raised two to three feet above the surface. The road, when opened near a brook at Dayhouse near Leebotwood, was composed only of loose gravel with brushwood underneath it, but the original road may have here been destroyed by the flooding of the stream. Its ridge can clearly be seen in many places, such as Newington, Wistanstow, Bushmoor, Little Stretton, and Botvyle, near All Stretton.[6]

The road is now commonly called Watling Street on our maps. But this appellation cannot be traced back beyond about 1700, and was probably introduced by antiquaries who considered the road a continuation of the main Watling Street leading from London to Wroxeter. In the middle ages its name seems to have been Botte or Bot Street, which Eyton mentions as used in early times for the Shropshire part of its course. The road itself, or part of it, seems to have remained in use in the eleventh century as a line of communication between Shrewsbury and Hereford.[7]

### (*d*) THE ROAD WEST

The third road from Wroxeter ran west apparently into Mid-Wales, possibly joining the upper Severn valley and running along it to Caer Sws. But such a small portion remains that it is only possible to offer suggestions. Its exit from Wroxeter is still more uncertain than that of the Leintwardine Road. It may have crossed the Tern near the present Tern Bridge and the Severn at Atcham, but the first real vestige of it is supplied by a lane beginning at Meole Brace, near Stanley House, and running due west to

[5] O.S. Shrops. (6 in.), xlii, NW., SW.; xli, SE., xlix, NE., SE., SW.; lvi, NW., SW.; lxiv, NW.; lxiii, NE., SE.; lxx, NE., SE.; lxxvii, NE. Dyke, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2), x, 173–91 ; Watkin, ibid. (Ser. 1), ii, 358 ; Wright, *Uriconium* (1872), pp. 11, 63.

[6] Dyke, loc. cit.

[7] Owen and Blakeway, *Hist. Shrews.* (Lond. 1825), i, 27, note ; Haverfield, *Journ. Ches. Arch. Soc.* vi, (1889), 38. The names Botvyle and Leebotwood preserve a reminiscence of 'Bot Street.'

Newton Farm. The line of this lane is continued by field boundaries, cart tracks, and hedged roads to Yockleton, Stretton and Westbury. From Cruckton it is identical with the Shrewsbury and Montgomery high road. This line has not yet, we believe, been suggested as Roman, but it is singularly direct ; it reproduces clearly the line of Watling Street east of Wroxeter, and the place-name Stony Stretton occurs in its course. It has certainly far more of Roman characteristics than the strangely tortuous lines suggested by Hartshorne and others, and accepted by the Ordnance Maps.[8] These latter seem imaginary and improbable : the one here conjectured has at least the merit of presenting no un-Roman features. Unfortunately its course west of Westbury cannot be pursued. It may have crossed the Long Mountain, possibly by the Ridgeway, descended into the Severn valley and followed that, past Newton, to Caer Sws. But we must leave the determination of its course to Welsh antiquaries who may find opportunity to excavate.

### (*e*) SUPPOSED BRANCH ROADS. (i) THE LONGFORD

Several branches of Watling Street have been alleged by various writers. Most commonly they have been traced from different points on the road between Oakengates and Weston under Lizard to Newport, Market Drayton and Chesterton (near Newcastle-under-Lyne). There seems, however, no reason to suppose that any of these three places are Roman sites, and for the roads themselves, there is, in general, no evidence. One line, however, does seem to be Roman, at least for some thirteen miles, and may have belonged to a road running north-west from Watling Street and providing a short cut to Chester or Manchester. Its southern end is conjectural. It may have branched off somewhere near Stretton and the Penk Brook and run past Aqualate Mere to the Newport and Weston Jones road. From there a possible line running north-west takes it along a lane to Whalleyford Bridge over the Lonco Brook and thence by a county boundary past Flashbrook Cottage and Camp Farm to Ellerton Hall fish pond. There, it would traverse Ellerton Park, cross Wagge Brook at the Mill Pond and follow, first, a lane to Ashfields (where it would turn almost due west), and then a footpath to the Falcon Inn at Hinstock.[9] At Hinstock the first really certain traces of the road begin, and here it is called the Longford—a name it has borne since the thirteenth century.[10] It first appears in a footpath running from near Hinstock School, past Bearcroft Pool to the modern Newport and Whitchurch road ; along this it climbs the hill to High Heath, and passes Mill Green, Four Crosses Inn, and Shakeford, where it is joined by a parish boundary, to Crickway bank near Wistanswick. Here it leaves the modern road for a short distance, but the parish boundary shows its course, and it rejoins the road at Warren Farm. It crosses the Tern at Ternhill Bridge and gradually ascends, passing Waterloo Cottages, where the parish boundary leaves it. At Bletchley it leaves the high road and seems to

[8] Hartshorne, *Salopia Antiqua*, 47, 133 ; Wright, *Uriconium*, 13 ; Watkin, *Shrops. Arch. Journ.* (Ser. 1), ii, 359. In general the routes suggested by these writers lie north of that given in the text.

[9] Previous antiquaries have conjectured a different line from Watling Street to this point, but its traces are scanty and unsatisfactory. It is noted in the text No. 2.

[10] *Shrops. Arch. Soc. Trans.* (Ser. 2), 1889, p. 155 ; ibid. (Ser. 3), 1904, p. xvi ; Eyton, *Antiq. of Shrops.* ix, 264.

run on in the same direction as before, along another parish boundary and a footpath to Wyrley Farm. There all traces of it disappear. If it continued in the same direction, it would eventually arrive at or near Chester. It is, however, as at present known, 'a road in the air.' We must wait until its extremities are explored before we can feel sure that it served as a Roman short cut from Penkridge to Chester.[11]

(ii) A road has been conjecturally traced along a part of the Wolverhampton, Newport, and Whitchurch road. In reality it bears little resemblance to a Roman road, except for the first two miles of its course. It is said to have branched off from Watling Street at Stoneyford. Thence it has been taken past Weston Heath and Pave Lane towards Newport, just south of which and close to its junction with the Wellington road, its alleged traces vanish. It has been stated to reappear at Chetwynd, and thence to run by Lane End over Chetwynd Heath, where a parish boundary follows its course for a mile, to the River Meese, which it crossed at Stanford Bridge, and from thence to Hinstock. Here it was thought to have been continued in the Longford, towards Whitchurch and Chester. But a better connexion between Watling Street and the Longford has been indicated above, and the traces of this road are so unsubstantial that it may be disregarded.[12]

(iii) A further branch has been suggested running from Watling Street south-east by Shifnal, Park Lane, Brimstree Hall, Hunnington Road, Ryton, Beckbury, Badger, and Ackleton to Chesterton near Worfield, and from there on by Quatford and Over Arley to Worcester, and it is supposed to be a continuation of the road from Hinstock and Newport. But traces on the ground are wholly absent. The main evidence for it lies in the mention in a perambulation of Morfe Forest in 1300, of a 'stoni strete,' south of Chesterton. But the document is of too late a date to prove that this 'stoni strete' is necessarily Roman, and if a Roman road existed from Over Arley to Worcester, it has yet to be found. The whole is probably only another example of antiquarian enthusiasm.[13]

(iv) Hartshorne mentions a branch of the Leintwardine and Wroxeter road which he supposed to have connected Wroxeter with the earthworks at Rushbury and Nordy Bank, on the slope of Brown Clee Hill. However, these earthworks in themselves do not seem to be Roman; while no Roman remains have been found at Nordy Bank and but doubtful ones at Rushbury. The road seems therefore imaginary and we describe it only for the sake of completeness. It is said to run from the Brown Clee Hill by Tugford across Corvedale, and past Holdgate and Hungerford to Holloway near Millichope on Wenlock Edge, and thence by Stanway and Roman Bank to Rushbury, and to continue by Wall-under-Heywood, Cardington, Chatwall, over the end of Hoar Edge by Causeway Wood to Ruckley, and straight on over a bridge which is alleged to be of Roman workmanship to Acton Burnell, and to the Roman road at Pitchford. The one piece of all this course that seems to be ancient is that near Causeway Wood. Here we meet with the name 'Devil's Causeway,' and at this point Hartshorne describes a roadway 13 ft.

[11] O. S. Shropshire (6-in.), viii, NE., SE.; xv, NE., SE.; xvi, SW.; xxiii, NW., NE., SE., xxiv, SW. Shaw, *Hist. Staffs.* (1798), i, 13–15; Watkin, *Roman Ches.* 70, 71. *Arch. Journ.* xxx, 153.

[12] Wright, *Uriconium*, 13, 17; Watkin, *Shrop. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), 358–9.

[13] Hartshorne, *Salop. Antiq.* 146, 263; Eyton, *Antiq. of Shrops.* 14, 219; Wright, *Uriconium* (1872), 13, 17; *V.C.H. Worc.* i, 213; and note 1. For Chesterton see Topog. Index.

wide, made of large blocks of basalt (local gritstone according to Pelham) 1 ft. to 2 ft. long, and 8 in. to 15 in. broad, and edged with roughly hewn flat stones 1 ft. to 2 ft. wide and 1 ft. thick. But proof that this is Roman is not forthcoming. Some of the names, such as Causeway, Holloway, and Stanway also suggest ancient roads, but of what date and direction we have no evidence.[14]

(v) A road connecting the lead mines with Watling Street near Craven Arms has been suggested by Mr. Wright.[15] No evidence for this road has yet been adduced and the ways by which these mines communicated with the adjoining country are still undiscovered.

## 7. Topographical Index

Acton Burnell.—The fragments of pottery found in a ploughed field, lying between Acton Burnell Park and Bulhill Brook, thought at first to be Roman and to indicate the site of a villa, are now known to be of mediaeval date [Auden, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 3), vi, Misc. p. xx; vii, Misc. p. ix]. For the road skirting the boundary of Acton Burnell Park, and marked 'supposed Roman' on the Ordnance Maps, see p. 273.

Acton Scott.—Dwelling-house, see p. 259.

Afcott.—See Wistanstow.

Alberbury.—Alleged site of Rutunium (Wright, *Uriconium*, 11). No Roman remains.

Alkington.—Roman coins are said to have been found here, two miles south of Whitchurch, and a mile west of the road to Wem [Watkin, *Roman Cheshire* (1886), 291].

Aston.—Lead pig, see p. 265.

Atcham.—Roman bricks are to be seen in the church walls, probably from Wroxeter. For an inscribed stone in the church walls, see Wroxeter inscriptions [Wright, *Uriconium* (1872), 36].

Attingham.—See Tern Bridge.

Bearstone.—Rude pottery found with the remains of a smelting-place was thought to be Roman, but no Roman objects were found with it. An earthwork has been mentioned as one of the many sites of Mediolanum, on the north bank of the river Tern, and four miles north-east of Market Drayton, but until further evidence is forthcoming, its Roman origin seems unlikely [Jones, *Journ. Brit. Arch. Assoc.* (1886), xxxvi, 126].

Berwick.—See Tern Bridge.

Bickton (near Clun).—'Roman remains' have been found here, but of what kind is not stated [*Shrews. Chron.* 18 Dec. 1896].

Bishop's Castle.—Lead pig, see p. 264.

Broughton.—Supposed building, see p. 262.

Burwarton.—Said to be a Roman fortified town or village, but no remains were found [Corbet Anderson, *Hist. Shrops.* (1844), 96].

Bury Walls.—See Hawkstone.

Button Oak.—See Kinlet.

Caynham.—See Whitton. Also earthwork.

Chesterton.—See Worfield.

Chirbury.—A silver coin of Maximinus found at Rorrington; once in William Mytton's collections [Blakeway MSS. in Bodl. Lib. xvii, 52].

Church Stoke.—A coin of 'Agricola' has been recorded as found about 1828 at a place called the Three Jacks on Offa's Dyke in this parish. The illegible coin deposited with ashes in a cist on the same Dyke is not stated to be Roman, though Watkin takes it to belong to this period, as also the earthwork on Church Stoke Hill, where no Roman remains have, as yet, been turned up [Lewis, *Topog. Dict. of Wales* (1840), *Church Stoke*, hence Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. i, 1879), ii, 347, 355].

Clee Hill.—Earthwork at Titterstone.

[14] Hartshorne, op. cit. 135–41; hence Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* 1879, ii, 345, 346, 359, 360; Wright, *Uriconium* (1872), 13; Pelham, *Trans. Severn Nat. Field Club* (1865–70), 45. For Rushbury see p. 261. The bridge, as Hartshorne describes it, contains no specially Roman features.

[15] *Uriconium* (1872), 13.

CLIVE.—Copper mines, exceedingly doubtful, see p. 266.

CRAVEN ARMS.—See Stokesay.

CONDOVER.—Many coin-moulds were found about 1747 in digging sand at Ryton in Condover parish, two miles north-east of the road from Leintwardine to Wroxeter, and not far from Acton Burnell. They were of clay, the size of a denarius, the thickness of a halfpenny, and forty-nine of them were of the following dates :—

(1) The reverse of a Septimus Severus (Cohen, type 790), A.D. 202.

(2) Impressed on both sides; on one, the reverse of a Septimus Severus (Cohen, type 454), A.D. 200; on the other, a head of Julia, wife of Severus.

(3) The reverse of a Caracalla, A.D. 202 (Cohen, type 179).

(4) The head of Julia, as above [Sir H. Baker, *Philos. Soc. Trans.* 1746–8, xliv (2), 557–60, No. 25. Plate x]. An urn, found at Little Ryton in 1905, seems to belong to an earlier age [*Shrops. Arch. and Nat. Hist. Trans.* (Ser. 3), vi, Misc. xx].

An iron box, 20 in. long and 14 in. broad, containing some ancient brass coins and a bronze statue, 16 in. high, was found in destroying the cellars of Condover Hall about 1767. ? Roman [*Gent. Mag.* 1767, p. 328], and some Roman coins in urns in a field called Castlefield close to the earthwork in Bury Wood [Blakeway MSS. in Bodl. Lib. xvii, 33A; xxv, 10].

EATON.—A number of urns, containing burnt bones, from a large barrow at the corner of the cross roads at Eaton, just south of the station, in Lydbury North parish, and about a mile south-east of the building at Linley, were thought to be Roman by Wright [*Uriconium* (1872),47].

HADLEY.—Roman coins were found here in 1840, about two miles west of Whitchurch, and near the earthwork at Pancastle. They were all second and third brass of the following emperors : Nero (A.D. 54–68), Plotina (A.D. 98–117), Commodus (A.D. 180–92), Macrinus (A.D. 217–18), Maximinus (A.D. 235–8), Postumus (A.D. 258–68), Victorinus (A.D. 265–7), Tetricus (A.D. 268–73), Quintillus (A.D. 279), Constantius (A.D. 291–306), Constans (A.D. 337–361). Also a coin of the 'Wolf and Twins,' another imperial coin, and also four Greek coins, but there is some doubt as to whether these last were found here. These coins were in the possession of Major Godsal of Iscoyd Park, and were given by him to the Whitchurch Museum [Watkin, *Roman Cheshire* (1886), 240. Information from Major Godsal].

HALESOWEN.—Reynolds records some 'Roman antiquities' found here [*Itin. Brit.* (1799), 443].

HANWOOD.—See Pontesbury.

HARLEY.—See Yarchester, p. 261.

HAWKSTONE.—Camden records Roman coins and armour from the quadrangular earthwork at Bury Walls; later writers mention iron arrow-heads from the camp and from Bury Farm, also pottery of uncertain date, and the stonework round a well within the camp was held to be the remains of a Roman bath. But as the iron arrow-heads were found inside the well, the supposition of a bath seems improbable, and the Roman date of the structure is wholly unproven. Roman bricks are said to be ploughed up within the area of the camp, and perhaps indicate a building. Two milestones and a Roman road lie about a mile south-west. A Roman altar is said to have been found in the neighbourhood, but it is now lost [Brit. Mus. Add. MSS. No. 30315, fol. 16, 17; 14 Dec. 1733 (Garbet's Letter to Mytton); Camden, *Brit.* (1607), 450; Blakeway's note in *Antiq. of Hawkstone* (about 1829), 59, 87, 88, 182, and MSS. in Bodl. Lib. xvii, 26; hence Hulbert, *Hist. of Shrops.* (1837), 115; *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), ii, 324; (Ser. 2), xi, 165; (Ser. 3), iv, Misc. pp. xix, xx; vi, Misc. pp. i–iv; *Arch. Journ.* xxx, 169; *Cat. of Loan Exhib.* (1898), p. 121 in *Shrops. Arch. and Nat. Hist. Soc.* (Ser. 2), x; Dukes' MS. Hist. of Uriconium, fol. 129 (Soc. of Antiq. Lib.). Information from the Rev. Prebendary Auden. As the site of Rutunium, see p. 269, note].

KINLET.—A gold coin of Tiberius (PONTIF MAXIMVS, seated figure with spear and olive, Cohen, type 15) was found about 1783 in Wyre Forest near Button Oak, in the parish of Kinlet and on the borders of Worcestershire, probably the same coin as one said to have been found in the Wyre Forest about 1770 [Burton, *Hist. Bewdley* (1883), Misc. xlix; *V.C.H. Worc.* i, 220]; another gold coin of Claudius A.D. 46 (Rev. S.P.Q.R. P.P. OB.C.S., Cohen, type 86) was found in Baveney Wood, west of Kinlet [Blakeway MSS. in Bodl. Lib. xvii, 52; xxv, 16].

KINNERSLEY.—Fourth-century coins have been found on Wild or Weald Moors, some Constantine (Cohen type 253), others with the Romulus and Remus reverses, and others with the victory and shield and exergue TRS [Hartshorne, *Salopia Antiqua* (1841), Int. xvi].

LANGLEY.—For Roman road here, and a bridge over a stream near Ruckley, which Hartshorne describes as Roman, see p. 273 [*Salopia Antiqua* (1841), 139].

LINLEY HALL.—Building : see p. 257.

LLANYMYNECH.—Copper mines on Llanymynech Hill. See p. 266.

MARBURY.—Roman coins are said to have been found here. [Horsley, *Brit. Rom.* (1732), 418, note].

MIDDLE.—Horsley records Roman coins from here, on the information of Dr. Tillotson, but Samuel Garbet in a letter to Mytton says Tillotson is not reliable [Horsley, *Brit. Rom.* (1732), 418, note; hence Reynolds, *Itin. Brit.* (1799), 454; Garbet, Brit. Mus. Add. MSS. No. 30315, fol. 16, 17; 14 Dec. 1733].

MINSTERLEY.—Lead pigs, see p. 265.

MORETON SAY.—A hoard of about one thousand coins was found in 1898 in ploughing a field opposite Fabric Cottages, near Longford, just north-east of the piece of Roman road of that name in the parish of Moreton Say. Forty-seven of them are in the possession of Mr. John Tayleur of Buntingsdale, Market Drayton, and are of the following dates:—1 Valerian (A.D. 253–60), 7 Gallienus (A.D. 253–68), 1 Salonina (wife of Gallienus), 4 Postumus (A.D. 258–68), 7 Victorinus (A.D. 265–7), 2 Marius (?) (A.D. 267), 8 Tetricus I (A.D. 268–73), 5 Tetricus II (A.D. 268–73), 8 Claudius Gothicus (A.D. 268–70), 4 Quintillus (A.D. 279). These examples suggest that the hoard was buried in the second half of the third century [*Cat. of Loan Exhibition* (1898), p. 97 in *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2), x].

NORDY BANK.—The earthwork here is often called Roman, but is doubtless of another date.

NORTON.—See Wroxeter, p. 241.

OAKENGATES.—Building, see p. 261.

ONSLOW.—'Roman fragments' have been dug up here [*Cat. of Loan Exhibition* (1898), p. 92 in *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2), x].

OSWESTRY.—A well and pavement and bits of iron resembling armour, found within the earthwork at Hen Dinas or Old Oswestry, have been thought to prove its Roman origin and its identification with *Mediolanum*, but the earthwork seems unquestionably of other date, and therefore this site must also be abandoned [Price, *Old Oswestry* (1815), 9; hence, Wright, *Uriconium*, 22; *Shrops. Arch. and Nat. Hist. Trans.* (Ser. 2), xi, 165; Hartshorne, *Salopia Antiqua*, 80, note]. See also Treflach.

PANCASTLE.—For the coins found near here see Hadley.

PITCHFORD.—A sword, said to be Roman, was found here some years before 1898 [*Cat. of Loan Exhibition* (1898), 5].

PONTESBURY.—House, see p. 258.

PONTESFORD HILL.—Lead mines, see p. 264, note. A small green glass lachrymatory was found here, perhaps the same as that from Pontesbury [*Arch. Camb.* 1867, p. 267].

QUATFORD.—A sword, said to be Roman, was found in the River Severn [MS. Min. Soc. Ant. xiv, 295, 11 Jan. 1776].

RATLINGHOPE.—Roman coins were found in a ditch between the New Leasowes and the Thresholds, about a mile north of Castle Ring, on very high ground—1,200 ft. to 1,300 ft. above sea-level—to the east of the road from Bishop's Castle to Shrewsbury [Hartshorne, *Salopia Antiqua* (1841), 37].

REDCASTLE, near Hawkstone.—A Roman coin was found here [*Cat. of Loan Exhibition* (1898), p. 97 in *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2), x].

RUCKLEY.—See Langley.

RUSHBURY.—Supposed building, see p. 261.

RUSHTON.—Wroxeter, see p. 253.

RYTON.—See Condover.

SHELVE.—Lead mines, see p. 263.

SHREWSBURY.—Upchurch and commoner wares, horns of red and fallow deer, boars' tusks, and black oak were found on the site of the Post Office about 1880, with pottery and glass of much later date; a large urn of common ware, about 22 in. high, at Gallow's Croft, near the general cemetery; a stylus from the bottom of St. Chad's crypt; a Roman coin at the 'Mount' in St. Chad's parish, about 1884; coins, including one of Domitian (A.D. 81–96), from the site of Mr. Pidgeon's house in High Street, and others of Roman date have been found in Shrewsbury.

Traces of a road were said to have been found running parallel with High Street, from English Bridge up the Wyle to the Cop, but it is presumably mediaeval. Remains of a villa are also said to have been found here, but this is an error for Salisbury in Wiltshire [*Cat. of Shrews. Mus.* in *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), v, 398; ix, 394; *Salopian Shreds and Patches*, viii, 266; Wright, *Uriconium* (1872), 22]. The urn from Gallow's Croft, the potsherds from the Post Office, and the stylus are in the museum [*Cat. of Loan Exhibition* (1898), p. 96 in *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2), x].

SNAILBEACH.—Lead pigs, see p. 265.

SNEAD.—Lead pig, see p. 265.

STANCHESTER.—See p. 262.

STOKESAY (CRAVEN ARMS).—A chatelaine with five pendants, 3½ in. long (fig. 37), was found about 1885, 6–7 ft. deep in gravel drift, in digging the foundations of a house near the River Onny and the Roman road from Wroxeter to Leintwardine, in Stokesay parish [*Arch. Camb.* (Ser. 5, 1889), vi, 91].

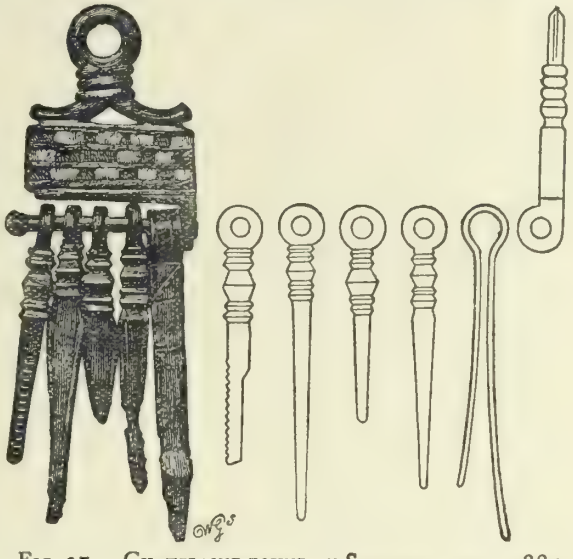


FIG. 37.—CHATELAINE FOUND AT STOKESAY ABOUT 1885 (After *Arch. Cambr.*)

STRETTON.—See Westbury.

TERN BRIDGE (WROXETER).—See p. 241.

TREFLACH.—A coin of Domitian (A.D. 81–96) was dug up out of a bank near here, three miles south of Oswestry [*Cat. of Loan Exhibition* (1898), p. 92 in *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2), x. Apparently the same coin as that said to be found in Offa's Dyke; ibid. p. 97].

WELSHAMPTON.—Coins were found here [*Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 2, 1899), xi, 167].

WEM.—See Hawkstone.

WESTBURY.—Lead pig, see p. 265; roads, p. 272. A fibula was found at Stretton, near here [Blakeway MSS. Bodl. Lib. xvii, 33A].

WESTON.—Supposed building, see p. 262.

WHITCHURCH.—An urn of yellow coarse ware 10 in. high, containing burnt bones, was found in 1899 about 2 ft. below the surface at Sedgford, half a mile south-east of Whitchurch, just to the west of the junction of the roads from Wem and Edgeley at Doddington. Near it, a month later, were found an iron lamp 4 in. in diameter, with an arm rising from the back and bent over the oil circle, and an iron rod 5½ in. long, perhaps for hanging the lamp. Also, a few yards away, near the fountain at Doddington, bits of a brown-lipped amphora and white dust (? burial) were found in November, 1900. A 'first brass' of Trajan (A.D. 98–117) was dug up close by, on Pauls Moss estate. A vase of reddish coarse ware, about 12 in. high and 9 in. in diameter, with a rudely-made lip, was found in digging the foundations of the market shed in 1903. A bronze lamp has also been found here, and fragments of a *mortarium* and Upchurch potsherds were picked up on the site of the Town Hall, next door. A fourth-century 'second brass' was found at Mossfields in 1902. This seems to point to some sort of inhabitation, of which more may be discovered hereafter [*Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 3), i, 150; iii, Misc. p. xxvii; Watkin, *Roman Cheshire* (1886), 290; O.S. Shrops. (6 in.) VII, N.E. All the above, except the bronze lamp from the market place, are in Whitchurch museum, and that, according to the Curator, is now in the possession of Mrs. Finch, Bark Hill House, Whitchurch. See also Alkington, Hadley, and Marbury].

WHITTON.—The walls of Whitton chapel, near Caynham, are said to contain Roman bricks [Wright, *Uriconium* (1872), 36].

WISTANSTOW.—A coin of Augustus was found about 1823 in building a cottage at Afcott Lodge, about half a mile east of the road from Church Stretton to Ludlow, and a mile east of the road from Wroxeter to Leintwardine, in Wistanstow parish, on the bank of Quinny Brook, between it and Byne Brook [*New Monthly Mag.* (1823), i, 383; hence Watkin, *Shrops. Arch. and Nat. Hist. Soc. Trans.* (Ser. 1), ii, 354].

WORFIELD.—The square earthwork called the Walls, at Chesterton, about five miles north-east of Bridgnorth, is sometimes thought to be Roman. Several Roman coins and a gold ring set with lapis lazuli, and of uncertain date, constitute the only objects found within the camp, and the names of the Walls, Chesterton, and Stratford Brook have been considered sufficient evidence of its Roman origin, or at least occupation [Gale, Letter to Dr. Harwood, 17 September, 1719, in MS. belonging to Prof. Haverfield; *Gent. Mag.* 1795, ii, 543; Camden, *Brit.* (ed. Gough, 1806), iii, 19; Hartshorne, *Salopia Antiqua* (1841), 157; hence James, *Worfield on the Worfe* (1878), 4; *Journ. Brit. Arch. Assoc.* (1873), xxix, 224; *Reliq.* (1882–3), xxiii, 15 for coins]. For the supposed Roman road near, see p. 273.

WROXETER.—Town, see p. 220.

YARCHESTER.—Building, see p. 261.

# APPENDIX

## *THE NAMES 'COLD HARBOUR' AND 'CHESTER'*

The place-name 'Cold Harbour' seems not to occur in Shropshire. Neither Hartshorne (*Salopia Antiqua*, 253 seq.), nor Wright (*Uriconium*, 35) can cite an example, and we have met with none. Wright mentions Cound Arbour near Berrington, as a possible corruption, but even this is very doubtful. The county provides, therefore, no evidence towards answering the question whether Cold Harbour generally indicates the site of a Roman building.

The place-name 'Chester' occurs five times—in the name Wroxeter (anciently Wroxcestre and the like), in the name of a pasture at Wroxeter, Chestre-gate, mentioned in a rental of A.D. 1350 (Wright, op. cit. 405); in the name Yarchester, near Harley, a spot where Roman buildings have been found (above, p. 261); in the name Stanchester, in the parish of Berrington, where nothing Roman has been noted (p. 262); and in the name Chesterton, applied to a square earthwork called the Walls, in Worfield parish, where only a few Roman coins have occurred (Alphabetical Index, WORFIELD).

Wroxeter itself, as Mr. W. H. Stevenson tells us, seems to have lost its *s* through French influence, like Cirencester in the local pronunciation. In both cases the governing principle may have been ease of speech. The apparently similar name Uttoxeter does not contain the 'chester' termination at all, but has another origin.

FIG. 38.—INSCRIBED STONE IN NORTH WALL OF ATCHAM CHURCH (see p. 248)

# DOMESDAY SURVEY

THE Shropshire portion of the Domesday inquest hardly ranks among the most interesting in the great record. Apart from the valuable description of the customs of the county and county town with which it opens, there are comparatively few of those glimpses of personal history and local usage which light up the survey of such counties as Berkshire and Worcestershire. Shropshire had no characteristic trade, like the sheep-rearing of Essex, or the salt-industry of Cheshire and Worcestershire, to give local colour to the pages of Domesday. In regard to subsidiary records and sources of contemporary or nearly contemporary date, it is but moderately favoured. It possessed two religious houses in 1086, but Wenlock Priory has left no cartulary, and that of Shrewsbury Abbey, even when supplemented by the local information of the Shropshire-born historian, Orderic Vitalis, does not afford assistance equal to that given for the adjoining county of Worcester by Heming's *Cartulary* and the later Norman surveys. Of the great inquest of 1212, which for Lancashire and Lincolnshire is almost a second Domesday, only a fragment survives.[1] Any deficiencies in this respect are to some extent compensated by the remarkable analysis of, and commentary upon, the Shropshire part of the survey, which form the groundwork of Eyton's monumental history of his native county. The usually careful rubrication of the hundreds enabled him to identify many manors now lost, and to restore with a minimum of conjecture that original arrangement of the Domesday returns under vill and hundred, the recovery of which was laid down by the late Professor Maitland as the first condition of further progress in the elucidation of the great survey.

It is necessary to add, however, that the true character of the assessment in hides has only been fully grasped since Eyton wrote, and that the explanation of the limitation of Roger of Montgomery's palatine position, which is offered in the following pages, does not seem to have occurred to him.

The statistics, which here as elsewhere form the bulk of the record, are superficially dry, but properly interpreted they may throw much needed light upon dark aspects of history and economics. Shropshire's border position lends a special interest to these data. We detect traces of extensive Welsh ravages before the Norman Conquest. The enumeration of Welsh districts dependent upon Shropshire in 1086 shows how completely the campaigns of Earl Roger or his men turned the tables upon the ancient enemy. Two classes almost confined to the border counties, the 'radmans' and the 'bovarii,' whose status is the subject of controversy, are met with in much larger numbers in Shropshire than at any other point along the march. The numerous slaves, and the possibility, as some hold, that most of the 'bovarii' were also of servile condition, raise questions as to the treatment of Welsh captives in war which demand close investigation.

[1] *Testa de Nevill* (Rec. Com.), 54–6; *Red Book of Exchequer* (Rolls Ser.), 509; Round, *Commune of London*, 261.

Domesday Book, it is now well understood, is primarily a rate-book for the collection of the (Dane) geld, with which is incorporated a mass of statistics as to the agricultural capacity of manors, obtained and carefully digested with a view to a revision, if need were, of the existing assessment. In dealing with its Shropshire section, then, our first business must be to ascertain the proportion in which the county was taxed, the principle on which it was assessed, and, if possible, whether it was over-rated or under-rated in comparison with other shires.

As Shropshire lay wholly in that part of Mercia which fell to King Alfred in the division with the Danes, its liability to taxation was still expressed in terms of the ancient unit of assessment, known as the 'hide,' while in the neighbouring Danelagh the newer 'carucate' was almost universal.

The original meaning of 'hide' was a family holding, and it seems reasonable to suppose that the number of hides at which a county was at first assessed represented an estimate, very rough no doubt, of the actual family holdings which it contained. Mr. Round, indeed, observing that in the eleventh century the ratio of hides to area varied greatly in different groups of counties, ascribes these variations to the original assessment, and that this assessment must have been artificial and entirely independent of area and value he had already inferred from the prominence of the five-hide unit. In the widely differing rates in question he would see 'traces of a polity as yet divided of those independent kingdoms from which had been formed the realm.'[2] But such variations may, perhaps, be explained without resorting to the assumption of a purely artificial assessment. Mr. Round seems to have overlooked here the part played in producing these differences of proportion between taxation and area by (1) the varying land-content of the family holding in different parts of the country, according to the density of the population and the intensity of cultivation, and (2) the reduction of the fiscal hides by 'beneficial hidation,' i.e. royal exemption of particular hides from taxation in favour of churches or individuals, and on a larger scale by such wholesale abatements as that which lightened the assessment of Northamptonshire by one-half between 1066 and 1086.[3]

The hide or family holding may be taken roughly as a plough-land, the land which could be tilled with a team of eight oxen.[4] Now, in a fair proportion of counties the total amount of land available in 1086 for such teams (though the full number might not be in use)—the number of 'teamlands,' as Professor Maitland puts it—is found to approximate pretty closely to the hidage of the county. This suggests that it is to the first rather than the second of the two causes mentioned above that we must look to explain any considerable variations between taxation and area in these cases.

But even in counties whose total assessment and agricultural capacity remained fairly well equated no close correspondence between the fiscal hides

[2] *Feudal England*, 95 ; cf. 63.

[3] Maitland, *Domesday Book and Beyond*, 457. Incidentally we may draw attention to a good Shropshire instance of the old distinction between 'inland' or demesne free of tax and 'warland' or 'gewered land,' the tenant land on which the burden of taxation was thrown. The manor of 'Lege' (Longnor, according to Eyton; but cf. p. 320 below) in Condover hundred had been split into two. Roger Venator held the 'caput manerii quae est inland,' but it was still acquitted of geld by the other portion, which was held by Azo of Renaud the sheriff (fol. 254*b* ; cf. Vinogradoff, *Growth of the Manor*, 226 ; Ballard, *The Domesday Inquest*, 247).

[4] For the mention under Shropshire of two to six oxen where the demesne or tenants did not possess a full team, see fol. 257*b*, 255*b*, 254*b*.

and the teamlands of individual manors must be expected. The system of sub-partitioning the hides at which the shire was assessed, first between the hundreds in blocks of a hundred, and then between the vills or townships of each hundred, singly or grouped, in smaller blocks based upon a five-hide unit, was much too rough to secure a really accurate apportionment of liability to taxation.

On the basis of agricultural capacity Shropshire in 1086 was a county with a low assessment. The total number of its hides as recorded in Domesday was 1,437$\frac{19}{24}$, and of these 71$\frac{1}{2}$ were exempt from the geld.[5] Yet 1,783 full plough-teams and five oxen were actually at work there,[6] and the jurors declared that there was land for 1,389$\frac{1}{4}$ more ploughs.[7] The 'teamlands' of the county, therefore, amounted to 3,172$\frac{7}{8}$, more than double its hidage.[8] Impressed by this divergence we note with interest that in the document known as the 'County Hidage,' which is apparently not older than the eleventh century, Shropshire is credited with 2,400 hides.[9] If the figure is correct the assessment of the county must have been reduced by more than one-third at some date between the composition of this document and the Domesday inquest. Shropshire had certainly suffered ravages which would have justified some abatement. Many manors in the western and southern parts of the county were lying waste at the death of Edward the Confessor, the result apparently of Welsh raids.[10] Much wider destruction was wrought when the Normans entered into possession. Manor after manor which yielded a good income in 1066 is entered as 'waste' when its new holder received it;[11] many were still waste in 1086,[12] and others were only slowly recovering their old value. The sum of the manorial 'valets' at that date still fell short of that of twenty years before by over £160.[13]

[5] Eyton does not give a total, but my reckoning agrees with the sum of the totals he gives for each hundred after subtracting two and a half church hides at Stottesdon, which he should have treated as he does in other similar cases as part of the nine hides of the manor and a virgate at 'Buchehale,' which he entered under two hundreds, having altered his view as to its locality. Professor Maitland's 'rough counting' of 1245 (*Dom. Bk. and Beyond*, p. 401) is unusually rough. My figure might require to be reduced by two if the fifty-two and a half hides in the *Castellaria* of Montgomery is a mere slip for the fifty and a half which is the actual sum of the items. Two manors, Neen (Sollars) and Clunbury, had never been hidated. The assessment of Chirbury is omitted, perhaps accidentally.

[6] Demesne ploughs (including those of sub-tenants) 655$\frac{3}{8}$, ploughs of villeins, &c., 1,128$\frac{1}{4}$. Professor Maitland gives a total of 1,755.

[7] The common formula in the earlier pages of the Shropshire Domesday is 'There can be x ploughs more.' Afterwards the more usual 'There is land for x ploughs' is general. There are instances (under Onibury and Clunbury, fol. 252, 258) of 'There were x ploughs T.R.E.,' which seems to be a more direct answer to the question originally intended. For the probable element of conjecture in the returns under this head see Maitland, *Dom. Bk. and Beyond*, 422.

[8] Professor Maitland does not supply any total of 'teamlands,' on the ground, apparently, that in a considerable number of manors only the actual plough-teams are mentioned. But this is exceptional, and in view of the large total I am inclined to believe that in such cases no further information was given because the land was fully equipped with ploughs.

[9] Maitland, *Dom. Bk. and Beyond*, 456.

[10] If to the manors expressly stated to have been waste T.R.E. we could safely add all those where the formula 'wasta fuit et est' appears without a 'valebat,' lands assessed at nearly 200 hides must have been waste in 1066.

[11] Manors assessed at 219 hides are credited with 'valets' T.R.E., but entered as 'waste' *post*, i.e. when received. This does not exhaust the amount of waste at that date, for many of the manors which were worth nothing in 1066 were still in the same condition. I have failed to trace any definite lines of ravage by these entries of waste and reduced value, though some districts, e.g. the north-eastern corner round Woore, evidently suffered more severely than others; the neighbourhood of Shrewsbury seems to have escaped serious injury.

[12] Manors assessed at 118$\frac{7}{8}$ hides were lying waste in 1086.

[13] Total in 1066—£925 1*s.* 3*d.*, in 1086—£861 12*s.* 0$\frac{1}{4}$*d.* Two of William Pantulf's manors, Alkington and Cross Hill, fell greatly in value between the date when he received them and that of the survey. But this was rare.

There is nothing inherently improbable, therefore, in the supposition of a large unrecorded reduction of assessment either in the reign of the Confessor or between 1071 and 1086. On the other hand such an assumption does not fit in well with some other indications afforded by the Domesday Survey. Of the 71½ hides which are described as exempt from geld thirteen belonged to the great estate of Wenlock Priory in Patton ('Patintune') hundred, which was rated at 63¾ hides; each of its manors there had been relieved of a portion of its hides, and as the reduction in the case of Much Wenlock, which heads the list, is explicitly stated to be as old as the reign of Cnut, it seems probable that it was not more recent in the other cases. The express mention of an abatement going back to at least fifty years before the survey raises a presumption against a sweeping reduction at a later date, unless indeed we suppose that this did not affect the whole county, or that St. Milburg, having already benefited by royal bounty, was excluded from it. Further doubts are suggested by the sufficiently close correspondence between the Domesday hidage and the fifteen hundreds into which the county was divided, whereas in the case of Northamptonshire quoted above the memory of the original assessment is preserved in the number of its Domesday hundreds. In the face of these facts it would be unsafe to press the theory of an extensive reduction T.R.E. or T.R.W.[14] It is possible that the 'County Hidage,' though in its present form dating from the eleventh century, is based on an older list, in which case the assessment which it assigns to Shropshire, supposing it to be correct, may have been revised before the reign of Cnut.[15]

Whenever and however the disparity between fiscal hides and 'teamlands' was created in Shropshire, it is sufficiently marked. If with Professor Maitland we represent the former by the letter A and the latter by the letter B, we find that in only eighteen of the county's 480 manors did A=B. In three manors A exceeded B. All the rest show an excess of B over A in varying proportions, with perhaps a general tendency towards a ratio of 2:1. In some cases the ratio is so high that 'beneficial hidation' may be suspected. Hodnet, for example, a manor of nineteen 'teamlands,' was assessed at one and a half hides only; Cleobury Mortimer, which had land for twenty-four ploughs, at four hides.[16]

A total of 480 manors and three berewicks, which are separately surveyed, with an assessment of 1,437 hides, involves an average manor of much inferior area and rateable value to those, for instance, of the neighbouring county of Worcester with its great church estates. The mass of Shropshire tenants in chief T.R.E. had been small men, and with the exception of the bishop of Hereford's manor of Lydbury North (fifty-three hides), and Earl Roger's *Castellaria* of Montgomery (fifty-two and a half), Domesday records no estate rated at more than 20 hides. Manors of one hide and half a hide were common, and a few were assessed as low as a virgate. Assessments including fractions of virgates occur, but there is only a single mention of acres.

[14] For a possible case of an assessment revised between 1071 and 1086, see n. 23.

[15] The only certain record of the hidage of individual Shropshire manors before that date is a charter of 901 (Birch, *Cart. Sax.* 587), in which three 'manentes' in Easthope and five in 'Peattingtune' (Patton) are given to Wenlock. They were manors of two hides and one hide respectively in 1086.

[16] On three manors there were apparently more ploughs than 'land for ploughs': Wigwig (fol. 258*a*), Pulley (260*b*), and (a sub-holding of) Stanton Lacy (260*b*). In the first case, at least, a clerical error may be suspected.

Brockton in 'Alnodestreu' hundred was rated at one virgate and eight acres, but this does not throw any light upon the number of acres which were reckoned to the fiscal hide.[17]

The hundreds are rubricated in the Shropshire Domesday with so much more fullness and care than in most other counties that it is possible to determine with fair accuracy the number of hides which were thrown on each of them. It is true that the majority of the manors on the demesne of Earl Roger are not assigned to any hundred by marginal rubric, for some reason which can hardly be that assigned by Eyton—that they were extra-hundredal.[18] But even those which were not *capita* of hundreds can be referred to their proper hundreds with something approaching certainty. Elsewhere a few manors seem to have been assigned to a wrong hundred. The greatest difficulty, however, is presented by the two groups of manors; one in the east of the county (Shifnal and three others), and one in the south-east (Cleobury North, Chelmarsh, and four others), which are rubricated as belonging to the distant hundred of Baschurch. Eyton's suggestion that their lords, Mortimer, Lacy, and Fitz-Tetbald, got them removed from 'Alnodestreu' hundred to secure practical freedom from hundredal authority fails to explain why they secured the privilege for these particular manors only. The fact, however, seems incontestable, for there is no reason to suspect a mistake in the rubrication in these cases.

The following is a list of the 15 Domesday hundreds and the hides which, subject to the foregoing explanation, may be attributed to them :—[19]

| *North Shropshire* | Hides | *South-East Shropshire* | Hides | Acres | *South-West Shropshire* | Hides |
|---|---|---|---|---|---|---|
| Recordine | 173 5/12 | Alnodestreu | 58½ | + 8 | Conodovre | 96½ |
| Odenet | 96 7/8 | Patintune | 114 | | Ruesset | 87¾ |
| Basecherche | 118¼ | Condetret | 49½ | | Witentreu | 85⅝ |
| „ (detached) | 26 | Ovret | 27½ | | Rinlau | 114½ |
| Mersete | 67½ | Colmestan (Culvestan) | 108 | | Lenteurde | 116⅜ |
| Sciropesberie | 100 | | | | | |

Four only of these hundreds, 'Colmestan,' 'Rinlau' (i.e. Rinlow), 'Alnodestreu' (Aelnoth's-tree), and 'Witentreu,'[20] bore the names of natural objects, such as so often formed the ancient meeting-places of hundred courts. In 'Mersete' and 'Ruesset' we have a rare, if not unique, instance in hundred names of the suffix -saetan in the sense of 'inhabitants,' rendered familiar by its presence in the names of the shires of Somerset and

[17] Fol. 257*b*, 'Ibi 1 virga terrae et 8 acrae.' The omission in this and many other cases of the usual 'geldantes' or 'et geldant' must not be regarded as of any significance. Actual field acres are once mentioned. Four servientes at Stanton Lacy held 'land for 3 ploughs and one ferling and 10 acres' (fol. 260*b*). If we take the ferling, as is usually done, to be a quarter of a virgate, and assume that the ten acres must be a smaller quantity, we shall have a many-acred field hide, but experience of Domesday discourages the latter assumption, and it must be noted that the ten acres is added under the line.

[18] The first three of Roger's manors, Wrockwardine, Condover, and Baschurch, are duly rubricated, and it seems possible that as each of these is mentioned in the text as head of a hundred, the rubricator realized that he was giving superfluous information, omitted the marginal rubric in the next three entries, which are also *capita* of hundreds, and carelessly continued to omit it where this excuse did not exist.

[19] Their number is sometimes incorrectly giving as thirteen (see Maitland, *Dom. Bk. and Beyond*, 459). 'Rinlau' appears once in the form 'Derinlau' (fol. 252).

[20] 'Witentreu,' or 'Wittingtre,' was probably on the opposite side of the Camlet to Chirbury, which had taken its place as head of the hundred before Domesday. The bridge is still called Whittre Bridge (Eyton, op. cit. xi, 69).

Dorset.[21] Condover and 'Condetret' may contain a Celtic root meaning 'a confluence of rivers,' which is represented by the modern French Condé. 'Ovret,' now Overs, hundred is possibly the 'upper' country of the Clee Hills.

For the view that the hides apportioned to a county were distributed among its territorial hundreds in equal blocks of 100 hides, or partly in such blocks and partly in round multiples and fractions of 100, there is much evidence from all parts of the country, and the adjoining county of Worcester affords a peculiarly neat illustration of this method of sub-partition.[22] Traces of it are observable in Shropshire in the assessment of Shrewsbury hundred and some fairly close approximations, as well as in the fact that the shire was assessed at nearly as many hundred hides as it contained territorial hundreds. On the other hand, the figures as a whole show that there must have been extensive manipulation of the original assessments, of which no record has been preserved, though here as elsewhere we may conjecture that 'beneficial hidation' and transfers from one hundred to another have played their part in producing a series of figures so very far from round. The same causes, aggravated by the multiplication of very small manors in some hundreds, render it impossible in most cases to trace the round blocks in which the hidage of the hundred was apportioned among its vills.[23] Nevertheless there is ample evidence of the use of a five-hide unit. Four manors, Bromfield, Much Wenlock, Stoke St. Milborough, and 'Alretone' (? Cause), are assessed at exactly twenty hides each, and Stanton Lacy, though credited with twenty and a half, may originally have been a fifth. Clun, Lydham, and Ford were fifteen-hide manors, while Emstrey, 'Tichelevorde,' and Lilleshall are rated at just ten hides. Of five-hide manors there were twenty-five fairly distributed over the county.

In some of the southern hundreds it seems even possible, with a little licence of conjecture in grouping, to follow the process of sub-partition. The hundred of 'Colmestan,' rated at 108 hides, is the neatest case. Proceeding from south to north its vills may be grouped as follows:

| | | | |
|---|---|---|---|
| Ashford Carbonell | 2 | | |
| Ashford Jones | 1½ | | |
| Huntington | 1½ | 10 | |
| Steventon | 1 | | |
| Sheet | 2 | | |
| Middleton | 2 | | |
| Bromfield | | 20 | |
| Sutton | 2½ | | |
| Upper Ledwich | 2 | 5 | |
| Poston | ½ | | |
| Stanton Lacy | 20½ | | |
| Clee Stanton | 2 | 25 | |
| Aldon | 2½ | | |
| Carried forward | | 60 | |
| Brought forward | | | 60 |
| Onibury | 3 | | 10 |
| Stokesay | 7 | | |
| Siefton | 5 | | 10 |
| Culmington | 5 | | |
| Corfham (Diddlebury) | 4 | | |
| Corfton | 3 | | 10 |
| Bouldon | 2 | | |
| Middlehope | 1 | | |
| Aston and Munslow | 8½ | | 10 |
| Marston | 1½ | | |
| Cardington | 5 | | 8 |
| Hope Bowdler | 3 | | |
| | | | 108 |

[21] 'Mersete' is regarded by Eyton as a corruption of Maes-sete, i.e. the dwellers in the 'field' (Welsh *maes*) or champaign country under the Welsh Hills. The modern place names, Maesbury and Maesbrook, seem to support this view. But their Domesday forms, 'Meresberie' and 'Meresbroc,'[2] suggest rather a derivation from 'maere,' boundary.

[22] Maitland, *Dom. Bk. and Beyond*, 451.

[23] The difficulty is greatest in the north, but even here we have such a beautiful instance of the division of hides between adjoining vills as that afforded by Ellerdine and Cold Hatton in Hodnet hundred (fol. 258*b*). Ellerdine was assessed at 1⅓ hides and Hatton at ½ hide and ⅔ of a virgate. At first sight the figures seem unconnected, but a little calculation shows that together they make up 2 hides. The fact, however, that both were held by Gerard, but had had different Saxon proprietors, may suggest that the joint assessment was recent.

The fact that Cardington and Hope Bowdler formed a detached portion of the hundred, leaving exactly 100 hides to its main body, makes the case even more striking.

The hundred of Patton ('Patintune'), rated at 114 hides, does not work out quite so neatly:

| | | | | | |
|---|---|---|---|---|---|
| Stoke St. Milborough | | 20 | Brought forward | | 72 |
| Ditton Priors | 12 | | Shipton | $3\frac{1}{2}$ | |
| Abdon | 3 | | Brockton | 2 | |
| Clee St. Margaret | 1 | 20 | Patton | $1\frac{1}{2}$ | 10 |
| Tugford | $3\frac{1}{2}$ | | Bourton | $2\frac{3}{4}$ | |
| Ruthall | $\frac{1}{2}$ | | 'Buchehale' | $\frac{1}{4}$ | |
| Holdgate | 5 | | Much Wenlock | | 20 |
| Stanton Long | 3 | | Acton Round | | 4 |
| Oxenbold | 1 | 12 | Little Wenlock | | 3 |
| Millichope | 1 | | Madeley | | 4 |
| Stanway | 2 | | Beckbury | | 1 |
| 'Tichelevorde' (Eaton-under-Heywood) | 10 | | | | |
| Rushbury | 5 | | | | |
| Gretton | 2 | 20 | | | |
| Easthope | 2 | | | | |
| Lutwyche | 1 | | | | |
| Carried forward | | 72 | | | 114 |

Beckbury was a detached manor,[24] and Little Wenlock and Madeley were separated from the rest of the hundred by the Severn. The hundred of 'Rinlau,' rated at $114\frac{1}{2}$ hides, may be conjecturally broken up into the following local groups:—

| | | | | | |
|---|---|---|---|---|---|
| Obley | 2 | | Brought forward | | $34\frac{1}{2}$ |
| Hopton | 2 | 5 | Kempton | 4 | |
| Corstone | 1 | | Edgeton | 2 | 10 |
| Clun | 15 | | Myndtown | $1\frac{1}{2}$ | |
| Clunton | 4 | 20 | Wentnor | $2\frac{1}{2}$ | |
| Purslow | 1 | | Lydbury North | 53 | |
| Hopesay | 7 | | Choulton | 2 | 55 |
| Sibdon | 2 | $9\frac{1}{2}$ | Lydham | | 15 |
| Barlow | $\frac{1}{2}$ | | | | |
| Carried forward | | $34\frac{1}{2}$ | | | $114\frac{1}{2}$ |

In the course of the Norman period the irregularities of size and of outline, so conspicuous in the Domesday hundreds, were to a great extent effaced by a drastic reorganization, perhaps the work of Henry I. With three exceptions even those hundreds which suffered little change in area were renamed. The new hundreds, after one reactionary alteration under Richard I, remained practically untouched until they disappeared from modern maps.[25]

The Shropshire of Domesday was not quite identical in area with the modern county. In some directions it included more, in others less. These variations of boundary are found chiefly in its southern half. For in the north the inclusion of the tributary and unhidated Welsh districts of Cynllaith and Edeyrnion ('Chenlei' and 'Derniou') in the hundred of 'Mersete' was

[24] The dedication of Beckbury church is to St. Milburg, confirming a suspicion that the church of Wenlock had had some interest here, lost before 1066, which led to the vill becoming a detached portion of the hundred of Patton and diocese of Hereford (cf. Eyton, iii, 300).

[25] See below, Appendix i, p. 306.

more nominal than real even while they remained dependent. The only substantial change of boundary in this quarter until the quite recent addition of Tittenley from Cheshire and the greater part of Sheriff Hales from Staffordshire was the annexation of the present civil parish of Cheswardine, which in 1086 lay in the Staffordshire hundred of Pirehill. Against this gain, moreover, must be set off the loss of the neighbouring Tyrley, which was early attracted to that hundred and county. Cheswardine and its member Chipnall were added to Shropshire in the reign of Henry II, when John le Strange, a Shropshire baron, succeeded in wresting them from the descendant of the Domesday tenant, Robert de Stafford.[26] As to Tyrley, Eyton suggests that it was put into the Staffordshire hundred in the reign of Henry I by its tenant William Pantulf, to bring it under the same hundredal jurisdiction as his manor of Almington in that hundred.[27]

Much greater changes have taken place since the date of Domesday in the south-eastern part of the county, where, in 1086, the Severn was the boundary for nearly the whole of its course between Newton, a few miles north of Bridgnorth, and the point where it enters Worcestershire. Only a short and narrow strip of Shropshire, with Quatford as its centre, lay east of the river. But Earl Roger personally held seven manors, Quatt, Romsley, Rudge, Shipley, Alveley, Claverley, and Norley (Regis), which, with Worfield, held by his younger son Hugh, formed a solid block of territory. At some date after Domesday the whole of this block was placed in the county of which Roger was earl. The four manors last mentioned are entered under Staffordshire in Domesday, the first four under Warwickshire, though locally in Staffordshire.[28] Mr. Eyton, however, has adduced strong reasons for believing that they all belonged to Staffordshire, and that the attribution of half of them to Warwickshire was due to a confusion of the returns sent in by the commissioners, whose circuit included both counties.[29] In this view the subsequent transference of the eight manors to Shropshire added sixty-three hides to that county at the expense of Staffordshire.

A further small addition here was made when Whittimere, a member of the manor of Bobbington, held in 1086 by the Shropshire baron Helgot (as under-tenant of Robert de Stafford), and afterwards by a younger branch of the lords of Castle Holdgate, became attracted to the court of the manor of Claverley, and so to Salop.[30] Recent readjustments of county boundaries have, however, restored Whittimere to Staffordshire.

Earl Roger's Worcestershire manor of Halesowen was also annexed later to Shropshire, but in modern times has been restored to its original county.[31]

While the boundary of Shropshire has advanced in the south-east since 1086, it has more than correspondingly receded in the south and south-

[26] Eyton, *Staffordshire Domesday*, 7. [27] Ibid. [28] *V.C.H. Warw.* i, 295, 308.

[29] *Staffordshire Domesday*, 2–5. This supersedes the explanation offered in his earlier work, the *Antiquities of Shropshire*. [30] Eyton, *Antiquities of Shropshire*, iii, 161.

[31] The statement by the Domesday jurors (i. 253*a*) that one of the eighteen berewicks of Morville in 'Alnodestreu' hundred rated at one hide and called Calvestone 'is in Worcestershire' has caused difficulty, as no such place can be found there. Eyton suggested (op. cit. i, 68) that it was a pure error of the jurors, and that Cold Weston in Patton hundred is meant. But the inclusion of such an epithet in the Domesday name of a vill is surely very unusual.

west. In the south, indeed, the county now includes Richard's Castle (part of), Ashford Bowdler, Ludford, and Ludlow, which, if Eyton's identification of the last-named with 'Lude' be accepted, were all entered under Herefordshire in Domesday. On the other hand, the Shropshire hundred of Leintwardine ('Lenteurde') included the greater part of the present Herefordshire hundred of Wigmore and the north-eastern corner of what is now Radnorshire. The duplicate entry of the waste vill of Cascob, one of these Leintwardine manors, in the Herefordshire survey shows that county boundaries were still subject to some doubt in the marches of Wales.[32] The growth of the marcher jurisdiction of the Mortimers seems to have gradually detached these lands from Shropshire, though the county was still claiming many of them at the end of the thirteenth century.[33] In the south-west, too, much of the Domesday hundred of 'Witentreu' (later Chirbury) became marcher land, and in 1536 was placed in the new county of Montgomery. It is uncertain whether the western half of the present hundred of Purslow, the hill region of Clun Forest, formed part of the Domesday hundred of 'Rinlau.' Mainstone and Bettws-y-Crwyn are not mentioned in any record until a much later date.[34]

Outside the geldable area of the county and not even nominally reckoned in any hundred, like Cynllaith and Edeyrnion,[35] several rent-paying Welsh districts are noticed in Domesday whose dependence corroborates the literary testimony to the prowess of Earl Roger's Norman followers in this quarter. From one 'finis de Walis' pertaining to the castle of Montgomery the earl was drawing in 1086 the annual sum of £6,[36] another, also unnamed, was held of him by a certain Tuder Walensis, who paid a rent of £4 5*s*.,[37] while the 'terra de Gal,' in which Earl Hugh of Chester was his tenant, yielded £2 annually.[38] The last-mentioned is undoubtedly Yale, the district about Llangollen, now part of Denbighshire. The English hold upon it seems to have been maintained more or less continuously down to the reign of John.[39] The problem of the locality of the two nameless 'fines' is complicated by the mention under Cheshire of a 'hundred' of Arvester which Earl Roger held, though Robert of Rhuddlan, Earl Hugh's follower, claimed it as part of 'Nortwales' (i.e., apparently, Gwynedd), his sphere of conquest.[40] Eyton supposes this 'hundred' to have been the 'finis' of Tuder Walensis, which he identifies with that lesser part of Maelor Saesneg (now a detached portion of Flintshire) which was not in Cheshire in 1086.[41] Arvester he takes to be Erbistock. The 'finis' attached to Montgomery Castle was, he thinks, Kerry and Kedewen in the valley of the Severn above the castle.[42] It seems possible that the 'hundred' of Arvester should be looked for in this latter quarter rather than on the Cheshire border. There is a sufficient resemblance between its name (which has nothing to do with Erbistock, since that vill is entered under Cheshire as *Erpestoch*, fol. 267*b*) and that of the 'cantred' of Arwystli adjoining Kerry on the west to turn our eyes in this

[32] *Dom. Bk.* i, 186*b*. Most of this borderland was 'waste,' and it is significant that no fewer than nine of these manors surveyed in Domesday cannot now be identified.

[33] Eyton, op. cit. xi, 326. [34] Ibid. 244. [35] See above, p. 285.

[36] Fol. 253*b*. [37] Ibid. [38] Fol. 254. [39] Eyton, op. cit. x, 51. [40] Fol. 269.

[41] Eyton, op. cit. xi, 48. The entry follows two manors in 'Mersete' hundred, and Bleddyn, elder son of Tuder ab Rys Sais, is said to have inherited Maelor Saesneg.

[42] Op. cit. xi, 172.

direction. The fact that Arwystli was debatable ground between Gwynedd and Powys, and though it remained politically part of the latter continued to be ecclesiastically in the diocese of Bangor, makes the suggestion more tempting.[43] If it be accepted, and Eyton's identification of Tuder Walensis' district with Maelor Saesneg adhered to, it will be necessary to suppose either that Arwystli was included in the 'finis' pertaining to Montgomery Castle, or that it was somehow omitted in the Shropshire survey.

Shropshire is the only county included in Domesday, except its neighbour Cheshire (if we exclude Cornwall on the ground that Robert of Mortain took his title from a foreign county), where in 1086 the great proportion of the land was held in chief of the king by the earl of the county, not as usual by a considerable number of baronial tenants. About 1071, on the dismemberment of the Mercian earldom of Edwin, the Conqueror had invested his cousin, Roger of Montgomery, *vicomte* of the Hiémois (Pagus Oximensis) in Normandy, and possibly earl of Arundel or Chichester, both of which Sussex rapes were held by him, with the earldom of, and nearly the whole of the crown rights in, the county of Shrewsbury or Shropshire.

'The same earl,' say the Domesday jurors, 'holds of the king the city of Shrewsbury and the whole county and the whole of the demesne rights (*dominium*) which King Edward had there, with twelve manors which the same king held and fifty-seven berewicks pertaining thereto.'[44]

This great grant, which carried with it the duty of defending the middle marches against the Welsh, created what was at a later time called a palatine county. As far as we can see the short-lived county palatine of Shropshire differed from that of Chester in one respect only, that a larger number of tenants in chief were left alongside the earl. In Cheshire the bishop of Chester or Lichfield was the only one. In Shropshire he had the companionship of his brother of Hereford, the abbey of St. Remy, and five laymen, Osbern Fitz-Richard, Ralph de Mortimer, Roger de Lacy, Hugh the Ass (*Lasne*), and Nigel the Physician, the first three of whom were, however, also under-tenants of the earl. They held in chief among them not more than sixty manors, or only one-eighth of the whole number in the county. The reasons for not mediatizing episcopal lands, or those of a great foreign monastery, are easily understood, but it is less obvious why certain lay barons should have been allowed direct relations with the crown, the more so as the most important of them held many other manors under the earl. Perhaps the clue is in our hands when we observe—what no one seems hitherto to have noticed—that with three, or possibly four, exceptions, the whole of the fifty manors held in chief by these five tenants lay at the southern end of the county in the hundreds of 'Condetret,' Overs, 'Colmestan,' and Leintwardine. Coupling with this peculiarity of local distribution the fact that these five, and they alone among the Norman tenants in Shropshire, were also holders of land in Herefordshire, one is led to the conclusion that in the earlier Norman settlement of the latter county they had secured a footing in South Shropshire, and therewith vested interests which were safeguarded when the grant was made to Roger of Montgomery.

That William Fitz-Osbern, who had received a similar grant of the earldom of Hereford shortly after the Conquest and was killed in 1071, held land, if not authority, in this region is attested by an interesting passage in the

[43] *Oxford Historical Atlas*, Plate 17. [44] Fol. 254.

Shropshire Domesday. In Ralph de Mortimer's fief held of the crown in 'Condetret' Hundred were included 'Melela' (Mawley), 'Lel,' and 'Fech.' These, it is added, had been held by three thegns as three manors T.R.E., but 'when Thurstan de Wigemore received them from Earl William he annexed them to the before-mentioned manor of Cleobury (Mortimer), and then and now they are valued there.'[45] Thurstan de Wigmore, who married Agnes, daughter of Earl William's favourite, Alured of Marlborough, held lands of his father-in-law in Ewyas, at Stratford in Herefordshire, and at Kennet in Wiltshire. In the former county he was also the tenant of Lacy at (King's) Stanford and of another Thurstan the son of Rou (Rollo) at Marcle; in the *castellaria* of Caerleon he held 8 carucates of William de Scohies.[46] His tenure in Wigmore is unnoticed in Domesday, at the date of which Earl William's castle there was (like Cleobury) in the hands of Ralph de Mortimer and the *caput* of his barony. Eyton identifies the Thurstan who in 1086 was Mortimer's tenant at Huntington in Ashford Carbonell and at Lingen and Shirley with Thurstan de Wigmore.[47] As Earl William is found disposing of Cleobury, it may have been he who annexed the neighbouring Farlow to the manor of Leominster and so to the county of Hereford, of which it remained a detached portion until the nineteenth century. The presence of Normans in Shropshire two years before the death of Edwin and the grant of the county to Roger of Montgomery is independently attested by Orderic's story of the Norman garrison in Shrewsbury besieged in 1069 by Edric the Wild, who retired on the approach of a relieving army commanded, it would seem, by Earl William.[48] This early occupation of Shrewsbury seems to afford an explanation of Mortimer's tenancy in chief in 1086 of a little group of manors in its neighbourhood, Meole Brace, Edgebold, Pulley, and Sheinton.[49] The first three had belonged, like Cleobury, to Queen Edith, and Eyton long ago suggested that they too passed to Fitz-Osbern.[50] Sheinton was not one of her manors, and there appears to have been some doubt as to its tenure in 1086.[51]

William Fitz-Osbern's grant of Cleobury to Thurstan may, indeed, be thought to render it unlikely that Ralph de Mortimer held that manor when Roger became earl of Shrewsbury.[52] We have no positive proof that Ralph held any land of Earl William, though he was his cousin as well as the king's, and seems to have served under him. Most of his estates in the west were perhaps received when Fitz-Osbern's son Earl Roger forfeited his possessions in 1074. But even supposing Mortimer not to have succeeded Thurstan at Cleobury until this year, the fact that he held in chief of the king implies that that manor had not been mediatized in 1071.

Roger de Lacy, who was tenant in chief in 1086 of Stanton (Lacy), Stoke (Stokesay), and Aldon in 'Colmestan' Hundred, and Cleobury North and

[45] Fol. 260. As Cleobury had belonged to Queen Edith, this passage shows that Freeman (*Norm. Conq.* iv, 586) was mistaken in thinking that she kept all her lands and honours until her death in 1075.

[46] Eyton, op. cit. v, 74 ; iv, 193.

[47] He was the reputed ancestor of the family of Lingen (Eyton, op. cit. xi, 343).

[48] Orderic Vitalis, *Hist. Eccles.* (ed. Le Prévost), ii, 193.

[49] Fol. 260*b*.

[50] *Antiq of Shrops.* vi, 350.

[51] It is entered first as held by Mortimer under Earl Roger (fol. 256*b*), and again, by an afterthought, at the end of the manors he held in chief (fol. 260*b*).

[52] Unless, indeed, Thurstan were, as Mr. Round incidentally states (*Feudal England*, 324), a Mortimer and was succeeded by Ralph in the ordinary course; but if that was the case he cannot have been the Thurstan who held Huntington, &c., in 1086. The statement in question, however, seems to be a mere slip.

Hopton (Wafers) in 'Condetret' Hundred, inherited them only a few months before on the death of his father Walter de Lacy, an old companion in arms of Earl William, who very probably enfeoffed him here as he did in Herefordshire.

Of the eight manors held in chief by Osbern Fitz-Richard, one, Burford in Overs Hundred, belonged before the Conquest to his father, the well-known Richard Scrob or Scrupe of Richard's Castle, the most prominent of the Normans who settled in Herefordshire under the Confessor; two, Stanage and 'Humet' in Leintwardine Hundred, had been in his own hands as early as 1066, and the rest were in all likelihood the gift of Fitz-Osbern.

Hugh 'Lasne,' that victim of the Norman fondness for uncomplimentary nicknames, who held in chief Knighton and Norton in Leintwardine Hundred, was a much greater man in Herefordshire, where Earl William had bestowed upon him Kenchester and twenty other manors.[53] In eight of these, as in his two Shropshire ones, Leflet was his English 'antecessor.'

The fifth and last of these tenants in chief, Nigel the Physician, who is entered as holding Wistanstow and 'Clev' in the same hundred,[54] also held nine manors in Herefordshire, in four of which, as in his Shropshire manors and others in Somerset, Hampshire, and Wiltshire, he succeeded the priest 'Spiritus,' or Spirtes.[55] Spirtes had enjoyed the favour of Cnut's sons Harold and Harthacnut,[56] but, as we learn from another passage in the Shropshire Domesday, had been banished under the Confessor.[57] Wistanstow, when he held it, belonged to St. Alkmund of Shrewsbury. According to a narrative in the Lilleshall Cartulary, which Eyton ascribes to the twelfth century, King Edward gave it, presumably after the banishment of Spirtes, to Godric Wiffesune, on whose death Earl Roger bestowed it upon his physician Nehel.[58] But this last statement cannot be reconciled with Nigel's tenancy in chief here and in Herefordshire, and he was physician to the Conqueror, not to Roger of Montgomery.

The lands of these tenants in chief, whose exceptional status recalls the first stage in the Norman occupation of the county, fill only 2½ folios out of 18. 'The rest,' says the index of tenants, 'Earl Roger holds with his men.'[59] In arranging their material the compilers followed the usual order. There was no 'Terra Regis,' but the ecclesiastical tenants, whether holding in chief or of the earl, are dealt with first (after the description of Shrewsbury), then Roger as the greatest tenant in chief, followed by his lay tenants, and lastly the lesser tenants in chief. To explain the limitations of Roger's suzerainty we have had to reverse this sequence as far as the last-named are concerned, but it will be convenient from this point to follow the order of the survey.

Shropshire, being then as now divided between the diocese of Lichfield (or Chester as it appears in Domesday) and the diocese of Hereford by the Severn, the bishop of Chester's seven manors, of which Prees (8 hides) was the largest, were naturally in the north of the county, and Lydbury (53 hides)

[53] Fol. 187.

[54] Fol. 260*b*. He also drew a rent of 16*s*. from the lands of the canons of Bromfield in 'Colmestan' Hundred (fol. 252*b*).

[55] Fol. 183; fol. 91; fol. 49; fol. 53.

[56] Heming, *Cartulary* (ed. Hearne), 254; *V.C.H. Worcestershire*, i, 289.

[57] See below, p. 313.

[58] Dugdale, *Mon.* vii, 750; Eyton, *Antiq. of Shrops.* xi, 355.

[59] Fol. 252.

and Onibury (3 hides), which belonged to the bishop of Hereford, in the south.[60] The former had had sixteen burgesses and sixteen canons in Shrewsbury T.R.E., but his burgesses certainly and his canons (those of St. Chad's) probably were considerably reduced in number twenty years later.

St. Remy (*Remigius*) of Rheims held of the king T.R.E. and T.R.W. a single unnamed manor in Overs Hundred, which Eyton identified with Silvington. This is clearly one of the estates promised to that monastery by Burchard, the young son of Earl Alfgar, who died at Rheims in 1061 on his return from a visit to Rome with Archbishop Aldred of York, and was buried in the abbey.[61] The other four manors which the bereaved father confirmed to them lay in Staffordshire.[62] As Caynham in the same hundred was held by Earl Morcar in 1066, Eyton conjectures with probability that Silvington had been originally a member of that manor.[63]

The ecclesiastical tenants of Earl Roger comprised two monasteries and six collegiate churches. His new abbey of St. Peter at Shrewsbury was as yet very modestly endowed with three manors near the city, of which Emstrey (10 hides) and Eyton-on-Severn (8½ hides) were the most important, and the patronage of a number of churches in various parts of the county.[64] Richer at present was the Cluniac priory which the earl had founded in the old nunnery of St. Milburg at Wenlock, destroyed by the Danes, restored by Earl Leofric, and subsequently again decayed and forsaken.[65] In Patton Hundred the priory held Much Wenlock (20 hides) and six other manors, making a total hidage of 43¾, more than a third that of the hundred. Four smaller manors rated at 4½ hides lay in other hundreds. This was not the whole of the former possessions of St. Milburg, some of which had passed into lay hands in the days of her eclipse. Domesday itself records that Eardington, near Bridgenorth, which Earl Roger retained in demesne, had belonged to the saint in 1066, and that Stoke St. Milborough, then called 'Godestoch' (20 hides), which he had given to his chaplains, ought to belong to her.[66] Patton and Easthope had been lost since the tenth century,[67] and Beckbury had almost certainly once been hers.[68]

Five collegiate churches in Shrewsbury—St. Mary, St. Chad, St. Alkmund and St. Juliana of pre-Conquest date with St. Michael in the Castle, of the earl's own foundation; and St. Mary of Bromfield, near Ludlow—held lands ranging from half a hide (St. Juliana) to twenty-seven (St. Alkmund).[69]

The canons of St. Mary of Bromfield, whose manors of Bromfield and Lower Ledwich are erroneously assigned by the Domesday clerks to St. Mary of Shrewsbury, were only in actual possession of half the former manor. The explanation given throws a curious side-light on the reign of the

[60] Fol. 252. Lydbury is afterwards called Lydbury North, to distinguish it from the bishop's Herefordshire manor of Ledbury. Bayston in Condover Hundred is said by the jurors to have belonged T.R.E. to the bishop of Hereford, who granted it for life to Edric (? the Wild), on whose forfeiture it was given to William Pantulf (fol. 257). Eyton suggests that the 'episcopus R.' who claimed Montford in Baschurch Hundred (fol. 255*b*) was also the bishop of Hereford. It is true that Robert de Limesey was only consecrated bishop of Chester in 1086, but the position of the manor points to him rather than to Robert de Losinga.

[61] Fol. 252; Dugdale, *Mon.* vii, 1042.

[62] Eyton, *Staff. Dom.* 41. They were Meaford, Ridware, Lapley, and Marston.

[63] *Antiq. of Shrops.* iv, 378. [64] Fol. 252*b*.

[65] Ibid. It is called an abbey here, though, as with most Cluniac foundations in England, its head was always a prior.

[66] Fol. 254; 252*b*; Stoke St. Milborough reverted to the priory probably as the chaplains died off.

[67] Birch, *Cartularium Saxonicum*, 587. [68] See above, p. 285. [69] Fols. 252*b*, 253.

Confessor. Ten of the twenty hides of Bromfield had formerly been held by one of the canons, that 'Spiritus,' or Spirtes, who has already been mentioned as the *antecessor* of Nigel the physician at Wistanstow.[70] On his banishment for reasons not stated King Edward gave these 10 hides to Robert son of Wimarc as a canon (*sicut canonico*); he, however, transferred it to his son-in-law. The canons complained to the king, who ordered the land to be restored to the Church, but postponed execution until the Christmas Court of 1065, to give Robert time to provide his son-in-law with land elsewhere. Edward, however, dying at that festival, the disseisin of the Church still continued twenty years later. 'Robert,' concludes the record, 'holds it now of Earl Roger. It is and was found waste.' The offender can hardly be any other than the well-known Robert son of Wimarc, staller and probably kinsman of the Confessor and sheriff of Essex under William, whose mother's name suggests a Breton origin.[71] Eyton, indeed, perhaps doubting whether a layman could hold land 'as a canon,' and aware that the great Robert FitzWimarc was dead before the date of Domesday,[72] proposed to identify this Robert with Robert 'the Deacon,' a Norman who was allowed to remain when many of his countrymen were expelled from England in 1052. His son-in-law, he thinks, was Richard Scrupe.[73] But the first objection does not seem to be fatal, and if the Robert of 1086 was Robert son of Wimarc himself, we must suppose that the Shropshire jurors had not heard of his death. Earl Roger apparently restored the 10 hides to the Church after 1086. The church of St. Alkmund was not so fortunate in the case of Spirtes' other Shropshire manor, Wistanstow, which it claimed as having been *victus canonicorum* T.R.E., or of 'Caurtune,' which 'Picot tenet injuste,' nor did St. Chad recover the 1½ hides at Wrentnall which the county testified to have belonged to it before King Edward's time, though they knew not how they were lost.[74]

The earl retained in demesne in 1086 eleven of the fourteen manors once held by King Edward and twenty-seven or twenty-eight other manors,[75] eight of which had belonged to Earl Edwin, two to his brother Earl Morcar,[76] one to their grandmother the Countess Godiva, five to Edric the Wild, and one (Edgmond) to Leofwine Cilt. This Leofwine was probably the younger brother of King Harold. Harold himself had had only one manor—Whitchurch—in Shropshire. Five of the Confessor's manors were no longer in demesne. Leintwardine was held by Ralph de Mortimer of the king, Maesbury of the earl by Renaud the sheriff, and Alberbury, 'Alretone' (Cause), and Minsterley of the same by Roger son of Corbet. The four last-named are, however, kept distinct in Domesday from the other manors which Renaud and Roger held under Earl Roger, being entered with his demesne manors. Alberbury and Maesbury were the *capita* of the hundreds of 'Ruesset' and 'Mersete.'[77]

[70] Nigel had also a rent-charge on Bromfield (fol. 252*b*), but this was paid by the moiety which the canons had retained.

[71] Freeman, *Norm. Conq.* iv, 734; *Dict. Nat. Biog.* xlviii, 359.

[72] *Dom. Bk.* ii, fol. 47*b*.

[73] Eyton, *Antiq. of Shrops.* v, 209.

[74] Fols. 260, 258, 259. It may be noted here that twenty-five parish churches are specifically mentioned in the Shropshire Domesday, and that priests are recorded at twenty-four other places.

[75] Six of these omitted in the proper place were inserted after the lands of Roger's tenants (fol. 259*b*).

[76] It may, perhaps, not be merely a coincidence that King Edward and Earl Edwin each had approximately 100 hides, and Earl Morcar 50. Five of Edwin's manors and six of Morcar's had passed to tenants of Roger.

[77] Fol. 253*b*.

Seven manors which the earl kept in his own hand are also expressly stated to have had hundreds 'pertaining' to them. They were Wrockwardine, Condover, Baschurch, Hodnet, Morville, Corfham, and Chirbury. The first four gave their names to their respective hundreds, Morville was *caput* of 'Alnodestreu' Hundred, Chirbury of 'Witentreu' Hundred, while to Corfham exceptionally two hundreds pertained, 'Colmestan' and Patton. King Edward had held nothing in the hundred of Patton, and this no doubt accounts for its profits being valued in Corfham, the *caput* of the adjoining hundred of 'Colmestan.'

In the cases of Wrockwardine, Condover, Baschurch, and Morville we are explicitly told that the king used to take twopence of these profits and the earl (Edwin) the third penny, which was the normal ratio of division in other shires. Unfortunately Domesday gives no separate statement of the amount of these hundredal profits either T.R.E. or T.R.W. such as it supplies for the Worcestershire hundreds. They are lumped in with the other revenues derived from the manors to which they 'pertained.'[78] With two exceptions T.R.W. the monetary 'appreciation' of these manors is expressed as a 'render' (*reddebat*, *reddit*), not as a 'value' (*valebat*, *valet*), which was almost universal in the description of private estates.[79] The 'render' of Wrockwardine T.R.W. and that of Corfham T.R.E. are stated to have been payments *de firma*,[80] and doubtless the others were also fixed payments. All their 'renders' before the Conquest, except that of Chirbury, which was 'waste,' exhibit an artificial character which may suggest an explanation similar to that proposed by Mr. Round for the 'renders' of royal and comital manors in the south-western counties, viz. that they represent the commutation of some formerly existing payment in kind such as the *firma unius noctis*. This feature will be best illustrated by a tabular arrangement :—

| | £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Hodnet | 3 | 6 | 8 | Condover | 10 | 0 | 0 |
| Wrockwardine | 6 | 13 | 8(?4) | Morville | 10 | 0 | 0 |
| Baschurch | 7 | 0 | 0 | Corfham | 10 | 0 | 0 |

It will be seen that if we allow ourselves a slight emendation in the Wrockwardine figure the last five amounts are, excluding Baschurch, multiples of the Hodnet figure (which = 5 marks) and Baschurch itself differs only from the double of that figure by an extra half-mark.

The suggestion here made is a little strengthened by a note after the manors of Chirbury, Maesbury, and Whittington to the effect that in the time of King Ethelred they together rendered half a *firma noctis*.[81] But as all three were waste in 1066 the money equivalent, if any, is unknown.

If there are no means of ascertaining what revenue was brought in by the hundred courts, or, we may add, by the pleas of the shire court, we are at least informed of the total amount at which these profits with the earl's

[78] This is stated in the case of the figures for 1086. It is possible that those of twenty years before are exclusive of these profits.

[79] Exceptions occur, some of which seem to throw light on the distinction between the two sets of terms. Thus of St. Chad's manor of Marton it is said 'T.R.E. it rendered 8*s.* ; now it is worth (*valet*) 10*s.*, but it only renders 6*s.* 2*d.*' (fol. 253). The reverse relation of value and payment appears at Bausley, which was worth no more than 2*s.* in 1066 and the same in 1086, 'yet it is at ferm for 6*s.* 8*d.*' (fol. 255*b*).

[80] 'Renders' *de firma* T.R.E. are also recorded in the case of Earl Edwin's manors of Ellesmere (fol. 253*b*) and 'Crugetone' (fol. 256).

[81] Fol. 253*b*.

revenue from Shrewsbury and his demesne manors were farmed. The *firma comitatus* in 1086 stood at the substantial figure of £305 15*s*.[82] About seventy years later the sheriff's 'ferm' seems to have been not more than £255.[83]

The only item of the 'ferm' for which Domesday supplies a separate total is that of the profits derived from the city of Shrewsbury.[84] It is to the enumeration of the sources of this revenue that we owe the interesting details as to the state of the town and its customs which head the description of the shire.[85] Shrewsbury in 1066 had contained 252 houses in the king's demesne and as many burgesses, rendering an annual 'gable' of £7 16*s*. 8*d*. or an average of rather over 1*s*. 7*d*. per house. The bishop of Chester (Lichfield) had sixteen houses[86] and as many burgesses, and possibly the twenty-one burgesses whom St. Alkmund had in the city in 1086,[87] the two who worked on St. Juliana's land, the nine who pertained to Mortimer's manor of Meole Brace, and the one entered under Robert Fitz-Corbet's manor of Woodcote in 'Ruesset' hundred[88] may have belonged to the churches and the *antecessores* of the two laymen twenty years before. The burgesses paid geld on 90¾ hides, which were brought up to the round 100 at which the 'Hundred of the City' was rated by agricultural lands held by the bishop, certain churches, and Queen Edith.[89] In 1086 the English burgesses complained that they were still held liable for the whole amount, though the building of the castle had swept away 51 'masures,' other 50 were waste,[90] 43 were held by French burgesses, and 39 had been given by the earl to his new abbey of St. Peter.[91] As the quota of each burgess was thus at least tripled, without allowing for any increase in the tax, the grievance was a very real one. We say the burgess's quota because it does not follow from this passage that he was liable for more than his individual share of the fixed rating, though the share varied with the number of the contributories. The case does not prove the existence of a joint and several (much less a communal) liability. At the same time there is a communal aspect about this repartitionable assessment which may be traced to the application of a land-tax to a town where there were no real hides in which the fiscal hides could take root.[92] The list of customary dues and services (*consuetudines*) rendered by the city is headed by the penalty of outlawry for breach of the king's special peace, and the forfeiture of 100*s*. for breach of the peace given by the sheriff, for 'forsteal' and for 'hámfare,' all of which no doubt might have been stated as accruing from the whole county, as they are in the Worcestershire Survey. It is noted that the three forfeitures were reserved to himself by King Edward throughout England and were not included in the 'ferms.' One suspects, too, that the fine of 40*s*. levied on those who neglected the sheriff's summons to a campaign in Wales, which is mentioned a little lower down, was payable by other than burgesses

[82] Fol. 254. [83] Pipe Roll, 5 Hen. II, 61.

[84] For the application of *civitas* to towns not bishops' sees, see Maitland, *Dom. Bk. and Beyond*, 183. Shrewsbury was still called a city in the reign of Edward I (Madox, *Firma Burgi*, 128).

[85] Fol. 252. [86] Ibid. Ten were waste in 1086. [87] Fol. 253.

[88] Fol. 256. The *masura* in the city which belonged to St. Peter's manor of Emstrey (fol. 252*b*) also probably contained a burgess.

[89] Cambridge and perhaps Oxford were also assessed at 100 hides (cf. Ballard, *Domesday Boroughs*, 65).

[90] Including presumably the 10 belonging to the bishop (fol. 252).

[91] The record adds that in all there were 193 houses not gelding, but there must be a mistake of 10 either in the total or the details. Is it possible that the 10 waste 'masures' belonging to the bishop are only included in the total?

[92] Maitland, *Dom. Bk. and Beyond*, 207.

When the king lay in the city twelve of its 'meliores' served as a guard, and, if he rode out to hunt, the 'meliores' who possessed horses accompanied him armed for his protection. On such occasions the sheriff had to find thirty-six footmen as beaters as long as he stayed, and when he went to the park of 'Marsetelie' (probably Marsley in Habberley) an equal number for eight days. When he left the city the sheriff furnished him with twenty-four horses.

The burgess who failed to appear at the date fixed in his case by the sheriff forfeited 10*s*. If he shed blood his fine was the high one of 40*s*. Two other *consuetudines* throw an exceptional light upon the status of some burgesses at this date. On this point the remarks of Professor Maitland may be quoted :—

> In the west some of the king's burgesses seem to have been holding under onerous terms. At Shrewsbury, which lies near the border of Wales, where every girl's marriage gave rise to an *amobyr*, a maid had to pay ten, a widow twenty shillings when she took a husband, and a relief of ten shillings was due when a burgess died.[93]

The burgess relief was also 10*s*. at Chester and Hereford. At Hereford it was only paid when the dead man had no horse and arms to be taken by the king, which shows that it was a 'heriot' rather than a relief in the strict sense. Another source of revenue from the city was the payment of 20*s*. made by each of its three moneyers for new dies when the coinage was changed.[94] The payments made by the town in the days of the Confessor amounted to £30 a year, the same as Leicester and nearly twice as much as Worcester. The king took two-thirds; the remaining third did not go to the earl as was usual, but, as at Exeter and Leicester, to the sheriff.[95]

In spite of the large decrease in burgess houses Earl Roger drew £40 from the town in the year before the survey. This, no doubt, included the old sheriff's third.[96]

The greater part of the extensive woodlands attached to the manors held of the earl was in the hands of his tenants, but in the case of Little Dawley, near Wellington, it was by exception retained in demesne by Roger.[97] This wood is conjectured by Eyton to have formed the nucleus of the forest of Wombridge. A more remarkable exception was the wood at Albrighton, close to the Staffordshire border, which the king kept in his own hands.[98] This solitary fragment of *terra regis* in the county seems to have belonged before the Conquest to the Mercian earls whose Staffordshire manor of Pattingham not far away was kept in demesne by the Conqueror. Hence, perhaps, his reservation of the Albrighton wood, 'no doubt with a view to the integrity or enlargement of the neighbouring forest of Brewood.'[99]

In connexion with the financial matters which have just been discussed it may be mentioned that the frequent appearance both in the 'valets' of manors and the 'renders' of mills and fisheries of sums of 1*s*. 4*d*., 2*s*. 8*d*., 5*s*. 4*d*., 10*s*. 8*d*., &c., clearly shows the prevalence, alongside the old English

[93] *Dom. Bk. and Beyond*, 199 ; for *amobyr* and *merchet* see Pollock & Maitland, *Hist. of Engl. Law*, i, 373.

[94] Cf. the entries under Worcester and Hereford, *Dom. Bk.* fol. 172, 179. The Shropshire notice informs us that the payment was due a fortnight after the purchase of the dies. Three moneyers was the number to which chief towns were limited by an ordinance attributed with some probability to Cnut.

[95] Round, *Geoffrey de Mandeville*, 289.

[96] Fol. 252. The 'borough (*burgum*) called Quatford' which attached itself to the earl's 'new house' there paid him nothing (fol. 254).

[97] Fol. 254*b*. [98] Fol. 259. [99] Eyton, *Antiq. of Shrops.* ii, 149.

reckoning by pounds and the Danish reckoning by ounces of 20*d.* and marks of 13*s.* 4*d.*, of the less familiar Danish reckoning by the ounce (*ora*) of 16*d.* and the mark of 10*s.* 8*d.* The 'ore,' indeed, is three times mentioned by name, though without indication as to whether it was an ounce of 20*d.* or one of 16*d.* Mills at Ford and Eardington rendered $3\frac{1}{2}$ 'ores' and 3 'ores,' and at High Ercall it was the custom before the Conquest, when the countess visited the manor, to bring her 18 'ores' of pennies.[100]

The use of the smaller *ora* of 16*d.* in counties which had never formed part of the Danelagh does not seem to have attracted much notice.[101] It is, however, this 'ore' which was legalized for general English use by an ordinance which there is some reason for attributing to Cnut.[102] As might be expected on the borders of Wales, several cases of cattle-rents are met with. The Welsh of Edeyrnion rendered eight cows, and two radmans at Clun paid two animals (*animalia*) as rent.[103]

The list of the Norman lay tenants of Earl Roger in his 'palatine' earldom is headed by his sheriff, Renaud (*Rainaldus*), 'a true Norman *vicomté*.' He is the Rainaldus Bailgiole of the Staffordshire Domesday, taking his name from Bailleul-en-Gouffern near Exmes, the *caput* of Roger's own *vicomté* in Normandy.[104] Besides a few manors in Sussex, Staffordshire, and Warwickshire, where he was also Roger's tenant, Renaud held no less than seventy in Shropshire. His lands lay in most of its hundreds, but the most compact section was in that of 'Mersete,' four-fifths of which was in his hands, including its *caput* Maesbury, where he had built the castle as yet called The Work (Luvre),[105] but better known as Oswestry Castle. The two Welsh dependencies of this border hundred, Cynllaith and Edeyrnion, paid tribute to him. The defence of this march and the conduct of wars against the Welsh constituted the most onerous duty attached to his office, in which he had succeeded Warin called the Bald, 'small in body but great in mind,' whose activity against the Welsh is recorded by chronicles of both peoples.[106] On the death of Warin, between 1083 and the date of Domesday, Renaud married his widow Amieria, niece of Earl Roger,[107] and succeeded to his office and his vast estates. But Eyton is no doubt right in supposing that he held them not in right of his wife, but by special grant during the minority of Warin's son Hugh, whose consent to his grants is sometimes expressed, and to whom he perhaps handed over the sheriffdom after 1102.[108] However this may be, a new grant by Henry I transferred both office and estates to the Breton Alan Fitz-Flaald, ancestor of the great family of the Fitz-Alans, and of the still more illustrious royal house of Stewart.[109] With the exception of two or three manors the whole of the Shropshire lands held in 1086 by Renaud de Bailleul appear afterwards in the possession of the Fitz-Alans.

[100] Fol. 253*b*, 254.

[101] Mr. Round points out, however, that there is evidence of it in Staffordshire and Worcestershire. For its employment in Danish districts see *V.C.H. Derb.* i, 330; *Nott.* i, 240; *Lanc.* i, 276.

[102] Seebohm, *Tribal Custom in Angl.-Sax. Law*, 341.

[103] Fol. 255, 258.

[104] Eyton, *Antiq. of Shrops.* vii, 204.

[105] Fol. 253*b*.

[106] Orderic Vitalis, *Hist. Eccl.* (ed. Le Prévost), ii, 210, 414–5; *Hanes Gruffydd ab Cynan* in *Myvyrian Archaeology*, p. 726, where he is called Gwarin o Amwythic, that is Warin of Shrewsbury.

[107] *Amilia* in one charter (Round, *Cal. of Docs. preserved in France*, 202).

[108] Op. cit. vii, 205, 208. For Renaud's Spanish crusade and conflict with Henry I in Normandy in 1119 see ibid. 210.

[109] Ibid. 220; Round, *Peerage Studies*, 129.

Warin is twice mentioned in Domesday as Renaud's 'antecessor'; once under Albrighton (Monks), which Alcher, Warin's tenant, as we know from Earl Roger's charter to Shrewsbury Abbey, had given to St. Peter's, though the gift was apparently not yet fully recognized in 1086,[110] and again under Tugford, which Renaud is here said to have given to the abbey 'for the soul of his predecessor.'[111] This last statement errs both in excess and defect, for the donor was really Warin and the gift comprised only 2½ of the 3½ hides of the vill. Perhaps Renaud executed an incomplete or testamentary donation of Warin.[112]

The order in which the earl's other tenants are entered is not determined by the size of their holdings, yet the place, immediately after the sheriff, given to Roger and Robert Fitz-Corbet corresponds to the extent of their combined estate and their responsible position on an exposed part of the frontier towards Wales. The two brothers, whose name is still a living one in the county, are mentioned with their father Corbat, or Corbet (who died before 1086), by the Shropshire-born historian Orderic as prominent and faithful assistants of Roger in the government of his earldom.

Most of their manors lay in the border hundreds of 'Ruesset' and 'Witentreu.' Roger Fitz-Corbet as the elder of the brothers was the better endowed. His possessions in 'Witentreu' included Worthen and part of the *castellaria* of Montgomery, while in 'Ruesset' he held a dominant position as lord of Minsterley, Alberbury, 'Alretone,' and other manors. In the last-named he seems to have built a castle, probably after the date of Domesday, and called it the castle of Caux (*Cause*) from the Norman district whence he or his father came. Cause became the seat of a long line of baronial descendants, and the English name was forgotten.[113] Robert Fitz-Corbet left only daughters, who carried his fief into the families of Botreaux (Boterell) of Cornwall and Fitz-Herbert.

Orderic mentions by name two other barons of Earl Roger, Picot and William Pantoul, or Pantulf, whose services Domesday shows to have been well rewarded. Picot (or Ficot) was the sobriquet by which Robert of Sai near Argentan in Roger's *vicomté* of the Hiémois seems to have been always known in England in preference to his real Christian name. His twenty-seven manors, which with three exceptions lay in the border hundreds of 'Rinlau' and Leintwardine, were assessed at as much as 75 hides, but many of them were 'waste.' Clun and Hope(say) were the chief manors of his fief, which by the marriage of his great-granddaughter Isabel went to swell the wide lands of the Fitz-Alans.[114]

William, 'surnamed Pantulf,' also came from Earl Roger's country in Normandy, being lord (*inter alia*) of Noron near Falaise in the Hiémois, where he endowed a cell of St. Evroul. He ultimately divided all the churches and tithes of his honour and one whole part of his substance at his death between St. Evroul and its dependency, and Orderic, a monk of the mother house, devotes some space to the career of its benefactor.[115] The majority of his twenty-nine manors, none of which were large, lay in the north-eastern hundreds of Hodnet and Wrockwardine. Wem, in the former

[110] Fol. 255*b*. [111] Fol. 254. [112] Eyton, op. cit. iv, 80. [113] Ibid. vii, 6.
[114] Orderic Vitalis, *Hist. Eccl.* (ed. Le Prévost), ii, 420; Eyton, *Antiq. of Shrops.* xi, 225.
[115] Ibid. ix, 157.

hundred, was the *caput* of his barony, which passed with an heiress in the thirteenth century to the Butlers.

William also held Almington and three other Staffordshire manors on the Shropshire border under Earl Roger, and may be the William who was his tenant at Bilton in Warwickshire. Fiefs of about the same assessed value as Pantulf's were held under Roger by the Herefordshire barons Roger de Lacy and Ralph de Mortimer, who have already been noticed as tenants in chief in the south of the county.[116] On the other hand, Osbern Fitz-Richard's mesne holding was almost nominal.[117]

Of Roger's own followers whom he brought with him to Shropshire the next best endowed were Helgot and Gerard. Helgot, or Helgo, whose name occurs in the Hiémois before the Conquest, held nineteen manors in the south-eastern hundreds, especially that of Patton.[118] At Stanton here he had already built that Castle Holgate, or Holdgate, which has effaced the old name of the township while immortalizing its builder's, if only in a corrupted shape. The descendants of Helgot, who was also a sub-tenant of some of his fellow-barons and held land of Earl Roger at Meaford in Staffordshire, took the name of de Castello, and survived in the male line down to 1189.[119]

Gerard, who is identified as of Tournai-sur-Dive, also in the Hiémois, founded no family. His lands, which were chiefly in Hodnet and Wrockwardine Hundreds, escheated to the crown after the death of his daughter Sybil and her husband Hamo Peverel.[120] Four other tenants of the earl held from 12 to 24 hides. Turold, who appears elsewhere as Turold de Verley, a place not easy to identify, was lord of Chetwynd and other manors in the north-east of the shire which from the latter part of the twelfth century were held by the Chetwynds from the Fitz-Alans.[121] Robert Fitz-Tetbald, the earl's chief tenant in Sussex,[122] received from him the important Shropshire manor of Shifnal ('Iteshale') and three others in its vicinity. Roger de Curcelle (Courseulles, in Calvados), whose chief manors were Sutton near Drayton and Tibberton, and Odo lord of Ruyton, Hordley, and Wykey, who is called Odo de Bernières in a charter quoted by Eyton, were possibly neighbours in Normandy, for there is a Bernières-sur-mer close to Courseulles. Roger, however, was much the greater man, being a large tenant in chief in Somerset, Dorset, and Wiltshire. His Shropshire manors soon passed, perhaps by forfeiture in 1102, to the Pantulfs of Wem.[123] Odo's interest in the county, too, determined early.

It is perhaps more than mere coincidence that three of the smaller Norman tenants of the earl who all bore official titles, Robert Pincerna and the brothers Norman Venator and Roger Venator, in each case held exactly 10 hides. Robert 'the Butler,' like many other Shropshire lords, seems to have shared his suzerain's forfeiture in 1102, but Norman 'the Forester' is thought to be the ancestor of the Pitchfords,[124] and the descendants of his brother Roger were barons of Pulverbatch in Condover Hundred.[125]

[116] See above, p. 288.
[117] Fol. 257*b*.
[118] Helgo was an old Norse name (Chadwick, *Orig. of the Engl. Nation*, 202).
[119] Eyton, *Antiq. of Shrops.* iv, 52.
[120] Ibid. viii, 128, 151.
[121] Ibid. ii, 47; viii, 82. Eyton supposes Turold to be the ancestor of the Chetwynds.
[122] *V.C.H. Suss.* i, 378.
[123] Eyton, op. cit. viii, 46; ix, 194.
[124] Ibid. ii, 150.
[125] Ibid. vi, 191.

The tenure of the single manor of Whitchurch ('Westune') under the earl by so great a man as William de Warenne finds its explanation in their cousinship, while the appearance of William Malbedeng, baron of Nantwich, as tenant of four small manors on the Cheshire border is easy to understand. He also held four berewicks of Whitchurch—Marbury, Norbury, Wirswall, and 'Stanleu'—which lay just over the boundary in Cheshire. It is not so obvious how Ralph Peverel, a tenant in chief in the eastern counties, came to be Roger's man for Cressage and three other manors.

The number of 'milites' recorded in Domesday as enfeoffed by Norman lords in the county is larger than is usual, amounting to thirty-four whose land (where stated) ranges from half a hide up to three and a half hides.[126] Two of them were paying rent to their lords.[127] As some sub-tenants are only called 'milites' quite incidentally it may be regarded as practically certain that others who are not actually so described belonged to the same class. Where names are given they are all Norman, but Eyton is of opinion that the two anonymous knights at Longford were English.[128] In the distribution of fiefs among the Norman feudatories in Shropshire there will have been observed a distinct tendency to concentrate a substantial part of the holding of any one baron in a single hundred or a group of adjoining hundreds. This feature may possibly be due to the military needs of a border county. At all events it does not correspond to anything in pre-Conquest arrangements. The estates of the Anglo-Saxon tenants in chief were, as usual, very much scattered, which is what we should expect in a county long settled and yet innocent of great agrarian changes. The result, then, of the increased concentration of estates effected by the new lords of the land was that in Shropshire, whatever may have been the case elsewhere, Anglo-Saxon holdings of more than one manor were seldom transferred *en bloc* to a Norman. The whole of King Edward's demesne with the exception of Leintwardine passed to Earl Roger, and Queen Edith's small estate went almost intact to Ralph de Mortimer, but Roger only reserved for himself about three-quarters of Earl Edwin's holding, and those of Earl Morcar, the Countess Godiva, and Edric the Wild were much split up. Among the lesser pre-Conquest estates the only marked exception to this rule is that of Toret of Wroxeter, who was 'antecessor' of Renaud the sheriff in six manors which he had held T.R.E. in three hundreds.[129]

Toret remained as the sheriff's under-tenant at Lee Gomery, Rodington, and Norton, to which the earl himself added Langley in Condover Hundred. These he seems afterwards to have exchanged for Moreton Corbet, Preston Brockhurst, and Lawley, which were held by his descendants until the thirteenth century, when they passed by marriage to the Corbets of Wattlesborough.[130] In 1086 the three manors just mentioned were still in the hands of the pre-Conquest tenants, the brothers Hunnit and Ulviet, either jointly or singly, though now only as under-tenants of Turold de Verley. As the Fitz-Torets and Corbets are found in possession of Stirchley and Evelith, the formerly certainly and the latter probably a berewick of Longford in Wrockwardine Hundred, Eyton suggests that the two 'milites' who held four of its six hides under Turold must have been Hunnit and Ulviet.[131]

[126] Roger Fitz-Corbet had 5 'milites' at 'Alretone' (Cause) and 4 at Worthen.
[127] At Morville (fol. 253) and at Beckbury (fol. 259).
[128] See below.
[129] Eyton, op. cit. iv, 280; vii, 310, 373.
[130] Ibid. vi, 140; x, 181.
[131] Ibid. viii, 114.

Among the few other Englishmen who had so far weathered the storm, Alward son of Edmund was specially fortunate in that, besides being allowed to hold of the earl directly two manors which his father had held of King Edward, he was enfeoffed by Roger in some eight others. Another pre-Conquest tenant who had not to become the vassal of one of Roger's barons was Siward, lord of Frodesley and Overs, whom Eyton is no doubt right in identifying with the Siward 'le Gros' (*Grossus*) who had exchanged the site of Shrewsbury Abbey for (Cheney) Longville.[132] This will throw light on his exceptional treatment, for we learn from Orderic that the Siward who owned the site in question and built the earlier wooden St. Peter's was a kinsman of the Confessor, 'Edelgari filius regis Eduardi consanguineus.'[133] He and his brother Aldred, 'praenepotes regis,' had, according to the same authority, submitted to King William at Barking in the early days of his reign.[134] Freeman makes him a grandson of Earl Uhtred by a half-sister of the Confessor, but he and Stapleton cannot be right in identifying him with the Siward Barn who took so prominent a part against the Conqueror in 1070–1 and was kept in prison until the end of the reign.[135] The identification is quite irreconcilable with the evidence of Orderic, the Shrewsbury Chartulary, and the Shropshire Domesday as to the position and doings of Siward 'son of Ethelgar.'

Was this Siward the same as the one who before the Conquest had apparently held Stanton (Lacy) and Aldon in 'Colmestan' Hundred, 'Tedenesolle' in Overs Hundred and Cleobury North, Hopton (Wafers) and Neen (Sollars) in 'Condetret' Hundred, retaining only the last-named manor in 1086 as under-tenant of Osbern Fitz-Richard ?[136] Eyton thinks not, but the fact that an Aldred was lord of Stoke(say), which adjoins Stanton, in 1066 almost tempts one to identify this Siward with him who had a brother of that name. No doubt Eyton is on somewhat safer ground in identifying the Siward of Hopton Wafers, Cleobury North, and 'Tedenesolle' with 'the rich man of Shropshire' of that name who gave evidence shortly before Domesday as to the rights of the Church of Worcester in the hundred of Oswaldslaw; for the three manors just mentioned had once belonged to Worcester. The Church lost them by the influence of Sweyn son of Godwin, who thus revenged the part played by Bishop Lyfing in compelling him to put away the Abbess of Leominster whom he had forcibly carried off. Eyton supposes that Siward had been the Church's tenant before the loss and remained tenant, though of the king, after it.[137]

The total number of under-tenants of the Shropshire tenants of the king and the earl in 1086 is reckoned by Sir Henry Ellis at 199, including some who are only described as 'milites' or 'radchenistri.'[138] This is certainly an over-estimate. As such tenants are mentioned merely by their Christian names, if by any, it was obviously impossible in drawing up statistics for the

[132] Eyton, op. cit. vi, 291 ; xi, 370.

[133] Orderic Vitalis, *Hist. Eccl.* (ed. Le Prévost) ii, 416.

[134] Ibid. 166. It may be noted here that Siward le Gros's signature to the foundation charter of Quatford College is followed by that of an Aldred, probably his brother (ibid.).

[135] Freeman, *Norm. Conq.* iv, 20, 475, 708 ; Stapleton, *Rot. Scacc. Norm.* 416.

[136] That all these manors belonged to *one* Siward is not proved, but probable enough.

[137] Dugdale, *Mon.* i, 602 ; Heming, *Cartul.* (ed. Hearne), 275 ; Eyton, *Antiq. of Shrops.* iii, 22. He suggests that Neen Sollars being a non-hidated manor may have had the same history (iv, 232).

[138] Ellis, *Introd. to Dom.* ii, 480.

whole of England to make a deduction where the same name recurring in different manors may be that of one person. But the student of a single county is able to allow, to a certain extent, for repetition, and the number of sub-tenants in Shropshire whose names are given cannot have much exceeded 120. The 'milites' and others who are nameless might raise this figure by twenty or so; but in cases where no demesne is mentioned, but two 'milites' or two 'radmans' are said to be there having x ploughs, it is hard to say whether they ought to be reckoned as under-tenants of these manors.[139]

On manors with demesne the highest class of tenants would probably be the 'Francigenae,' of whom thirty-six are enumerated. The status of these Frenchmen is not defined save in the case of three who are described as 'francigenae servientes,' a description which need not be taken as marking them off from the others, for 'it is probable that many of these francigenae were serjeants of various kinds, whose services were rewarded by land.'[140] Of that class of 'riding men' (*radchenistres*, *radmans*) which in Domesday is almost wholly confined to the counties near the Welsh border, Shropshire claims 177, nearly a third of the total number recorded. Nothing is said here of their services, but Mr. Round has shown that the duty which gave them their specific name was that of attendance upon their lord as escort, and not that of military service as Professor Maitland had supposed.[141] In a few small manors, as mentioned above, they seem to be under-tenants of the whole manor, and have 'bordars' under them.[142] In Worcestershire they were sometimes practically indistinguishable from the 'liberi homines' or (a rarer phrase) 'franci homines,' of whom a small number are noted in Shropshire. The line which separates the fully free from those less free or not free at all is passed when we come to the normal elements of the village population. Domesday, however, is primarily concerned to record agricultural capacity rather than legal status. The vague 'homines' occurs in a fair number of cases, and once we get a single figure for the 'franci' and 'villani' on a manor (*viii homines inter francos et villanos*).[143] In the enumeration of those possessing plough-teams the 'radman' and the 'liber homo' are not always given precedence. The mention of the village officers is sporadic. The reeve is distinguished nine times, the smith eight times, and the miller and bee-keeper (*custos apium*) once each. Of the agricultural population the villeins (*villani*) or villagers *par excellence* formed the largest class. They numbered 1,814, while the bordars (*bordarii*), who seem to have differed from them only in possessing a smaller provision of land and fewer oxen, were proportionally less numerous than in the country at large. Of them there were some 1,150.[144]

Similar in legal condition to the two classes just mentioned, but practically inferior in having no share in the arable land, were the 'coscets' and 'cotarii.' They were fairly numerous in many south midland and southern counties, but are poorly represented in Shropshire, as in all the western shires north of Somerset.

[139] E.g. fol. 255 (Achetone).
[140] *V.C.H. Worc.* I, 273.
[141] Ibid. 250; *Engl. Hist. Rev.* XX, 280.
[142] Fol. 257*b* (Woore).
[143] Fol. 252*b*.
[144] I arrive at a rather larger figure for the villeins than Ellis, and as we differ in regard to the number of other classes I have given both sets of figures in Appendix II (p. 307). A glimpse at the relations of villeins to their lords is afforded by the casual mention that five fisheries at Ruyton of the Eleven Towns were 'in censu villanorum' (fol. 257*b*). The *dimidii villani*, of whom nine are mentioned in Shropshire and contrasted with *villani integri*, are explained by Maitland (*Dom. Bk. and Beyond*, 74) as men who had two lords.

In the counties along the Welsh march Domesday records the existence of a few 'hospites.' These were colonists whom the lord had invited on to his land. Seven are noted in Shropshire. They paid rent, but their status is not further elucidated.[145] These border shires, too (with the exception of Gloucestershire), are the counties to which in Domesday the class described as 'bovarii' or oxmen is almost entirely restricted. Close upon 400, or more than half the total number recorded, were in Shropshire. Mr. Round has shown from later cartularies that these oxmen had charge of the oxen of the demesne ploughs, and took part in the ploughing ; also that two of them were apparently assigned to each plough.[146] This proportion is found to obtain in a large majority of the cases where they are mentioned in Domesday. As the 'servi' often bear the same ratio to the demesne ploughs,[147] and in some cases are represented in later documents by 'bovarii,' Mr. Round concludes that it is highly probable that Domesday uses the terms alternatively, the one expressing legal status, the other occupation. Its occasional mention of 'liberi bovarii,' of whom there is one recorded in the Shropshire manor of Upton Cresset,[148] might seem to bear out this view, and as late as 1127 some of the 'bovarii' on the Peterborough estates were slaves.[149] Yet there are difficulties in accepting the conclusion that the 'bovarii' of Domesday were, with inconsiderable exceptions, indistinguishable from its 'servi.' On this assumption it is not easy to understand the limitation of the Domesday use of the term practically to a few western counties, and its very sporadic employment within those limits.

A greater difficulty is the separate enumeration in some cases of 'servi' and 'bovarii' on the same manor where their joint proportions to the demesne ploughs point to their being all oxmen.[150] It may be noted, too, that in the entry dealing with Huntington manor in 'Colmestan' Hundred, 'iiii servi' is corrected over the line into 'bovarii'.[151] This proves little, of course, if the scribe was merely correcting his own misreading of the original return, but it would be significant if he reproduced a correction which occurred in the return itself.

Supposing the distinction made between 'bovarii' and 'servi' not to be quite arbitrary, two possible solutions suggest themselves. It may be that Domesday takes no notice of ploughmen, *qua* ploughmen, except when free men are doing work usually left to slaves, and that all its 'bovarii' are 'liberi,' though this is only once or twice expressly stated. The mention of 'bovarii liberi' need not, perhaps, imply that the other 'bovarii' were slaves any more than 'liberi villani' implies that other villeins were slaves.[152] Perhaps, again, while not exactly free, even with the restricted freedom of bordars and cottars, the 'bovarii' of Domesday were men who were throwing off the

[145] Maitland, *Dom. Bk. and Beyond*, 60.

[146] *V.C.H. Worcestershire*, i, 274.

[147] This is commonly so in Shropshire. The number of 'bovarii' and 'servi' recorded in the county is together only a little more than double that of the demesne ploughs.

[148] Fol. 255. 'In dominio sunt ii carucae et iii servi et unus liber bovarius.'

[149] Maitland, *Dom. Bk. and Beyond*, 33. In one Shropshire case (Worthen) villeins and bordars seem to have had 'bovarii' (fol. 255*b*).

[150] E.g. fol. 259 (Betton-in-Hales). Professor Vinogradoff states that the *ancillae* or women slaves are never associated with the 'bovarii' (*Growth of the Manor*, 334). They are, indeed, enumerated together on the demesne of one Shropshire manor (Donington, fol. 253*b*), but this is the only case I have come across, and the phrase 'inter bovarios et ancillas' is never found.

[151] Fol. 256*b*. The stroke under 'servi' shows that the interlineation is not a gloss, but a correction.

[152] *Dom. Bk. and Beyond*, 45.

slough of mere servitude. When we get a further glimpse of the Worcestershire 'bovarii' in the Evesham Cartulary, their typical holding seems to be the quite respectable one of half a virgate.[153] That the Norman Conquest ameliorated the status of the lowest class of the free population, and that the true 'servi' before long disappeared, is well known. The statistics given in the Essex Domesday show that in that county there was a large decrease in the number of the 'servi' within twenty years of the Conquest. The 'bovarii' of the west may conceivably be the result of a similar movement there.[154] If this were so they would present some affinities to that class of 'geburs' to whom the Normans applied the continental name of 'Coliberti,' a class fairly well represented in the south-west, but thinning in numbers northwards, until Shropshire could only show two small groups at Burford and Stottesdon in the south-eastern corner of the county. The 'bovarius' indeed had no oxen of his own, while the 'colibertus' had usually both oxen and land, normally a virgate. But even if he was not of servile extraction, as has been suggested, the fact that his stock was provided for him by his lord made him a very dependent person. The boors were regarded as distinctly less free than the villeins, bordars, and cottars, and intermediate between them and the 'servi.'[155]

In Shropshire Domesday records 879 'servi,' besides 49 'ancillae' and 78 slaves whose sex is not discriminated. Ellis omitted these last because he took the figure in such an expression as '8 inter servos et ancillas' to refer to plough-teams possessed by them,[156] and not as the joint number of the male and female slaves on the manor. Assuming that in these cases the men on the average formed half of the whole number, the ratio of the 'servi' in Shropshire to the total population recorded in Domesday is about 18 per cent.[157] As percentages not much lower are found as far east as Buckinghamshire and Hampshire, and none of the intervening counties show a ratio of less than 13 per cent., Mr. Round denies that the figures lend any support to the view that the slave population in the shires along the border of Wales had been swollen by prisoners taken in forays against the Welsh in recent times.[158] The force of his argument is somewhat weakened when the slip by which he reduces the percentage in Gloucestershire from 24 to 15 is corrected, and still more if his contention is accepted that the 'bovarii' of Herefordshire, Worcestershire, and Shropshire were in large part 'servi,' or even if they are regarded as a class of men who had been slaves at no very remote date.

It is worth noting that no 'bovarii' are returned for Gloucestershire, and that if we add the oxmen in the other three counties to the slaves, their percentages rise to 15, 20, and 25 respectively. But the status of the former class is not yet sufficiently well established to make this combination certain, and even if it were the comparatively low ratio in Herefordshire, and

[153] *V.C.H. Worcestershire*, i, 274.

[154] *Vierteljahrschrift für Social- und Wirtschaftsgeschichte*, ii, 468 ; Vinogradoff, *Growth of the Manor*, 334.

[155] *Dom. Bk. and Beyond*, 36. Vinogradoff (op. cit. 335) arguing from their Latin name suggests that 'they were men who had been liberated by a collective act and, possibly, held together in some way either by their settlement or by their common manumission.'

[156] Eyton fell into the same error. For rare instances of 'servi' with a few oxen see fol. 254 (Montgomery) and 256*b* (Plash).

[157] Allowing for Ellis's omissions.

[158] *V.C.H. Worcestershire*, i, 276.

still more in Cheshire, where the 'servi' returned form only 8 per cent. of the recorded population, or with the 'bovarii' 11 per cent., would be difficult to reconcile with the hypothesis under discussion. Professor Maitland has, indeed, suggested that in some counties only those slaves who had cottages to themselves were entered in Domesday, but we are hardly justified in assuming that this was only the case in counties where a low ratio is shown. It must be added, in conclusion, that a high percentage in these counties as compared with those to the east of them need not have been 'due to proximity to the Welsh border' any more than it was in Cornwall, where the slaves formed 21 per cent. of the population. In the one case, as in the other, it might be accounted for by the enslavement of a larger proportion of the original Welsh inhabitants by the English conquerors. However this may be, there is ample evidence in Domesday that not all Welshmen in Shropshire were slaves. In its western hundreds we find nearly seventy 'Waleis' or 'Walenses,' some of whom are stated to be paying rents ranging from *7d.* to *5s.* and one at Kinnerley a hawk 'de firma.' At Rhiston in 'Witentreu' hundred a Welshman had a full plough-team.

Ellis reckoned the recorded inhabitants of Shropshire at 5,080. On a recount I make the total 5,162.[159] Here as elsewhere there is reason to suspect considerable omissions in Domesday, which render hazardous any attempt to estimate the population of the county on the basis of its figures. To take only one instance, the number of burgesses of Shrewsbury mentioned is clearly below the actual figure, even after the shrinkage which followed the Conquest.

The evidence of the Shropshire portion of the great inquest, which is called the 'descriptio' in the Shrewsbury entry, as to the method of inquiry and compilation is all of an indirect kind. In his *Notes on Domesday* (1877) Eyton placed the county in the circuit of the commissioners who took the inquest in Cheshire and Staffordshire. But a closer study of the survey of the last-named county led him to the conclusion that it was in the same circuit as Warwickshire and Oxfordshire.[160] On the other hand there is perhaps sufficient similarity in phraseology between the Cheshire and Shropshire returns and those of Worcestershire, Herefordshire, and Gloucestershire, which Eyton regarded as forming a separate circuit, to justify a conjecture that all these five western counties were taken by the same commissioners.[161] If so we know the names of the royal representatives who held the inquiry whose results we have been studying; for some Worcestershire documents in Heming's *Cartulary* [162] record that the survey of that county and several others was carried out under the supervision of Remigius bishop of Lincoln, Earl Walter Giffard, Henry de Ferrers, and Adam brother of Eudo the king's *dapifer*. Mr. Round has drawn attention to the fact that none of these was a holder of land in Worcestershire, from which he infers that William selected his commissioners for each district from those unconnected with it by tenure of land.[163] The inclusion of Shropshire and Cheshire in the circuit of those just mentioned would not disturb this generalization, but it will need some modification if Gloucestershire and Herefordshire were included, since Henry de Ferrers held land in both these counties.

[159] See App. II. [160] *Staff. Dom.* 5. [161] This is Mr. Ballard's view (*The Dom. Inq.* 12).
[162] Ed. Hearne, 75, 77, 288. [163] *V.C.H. Worc.* 246.

The re-arrangement under fiefs of the original returns which, as is well known, were made by vills and hundreds, has been effected in the case of Shropshire with considerable care. But the work of compilation was not done without some of the mistakes and traces of hesitation which are only to be expected where the clerks had no special local knowledge. One of the errors of the completed record—if it is an error—is, indeed, attributed by Eyton to the ignorance of the local jurors themselves. On folio 253, 'Calvestone,' a berewick of Morville (in 'Alnodestreu' Hundred), assessed at one hide, is said to be in Worcestershire. No such name is now known in that county, and Eyton suggests that Cold Weston in Patton hundred was the place meant. However this may be, it is the compilers who must be held responsible for the lumping together of the lands belonging to St. Mary of Shrewsbury and St. Mary of Bromfield and for the reading St. Witburga instead of St. Milburga.[164] There is a suspicion, too, that in 'Condetret' Hundred they have taken the name of an English tenant Fech for the name of a manor.[165] Again, the entry at the foot of successive pages (fol. 260, 260*b*) of a hide at 'Dodentone' belonging to Cleobury Mortimer and a hide at 'Dodentone' belonging to Cleobury North looks like a mere duplication.

In the enumeration of Earl Roger's manors the total given for the berewicks is in excess of the details, while the number of manors in which he succeeded others than King Edward is largely understated.[166] The lands of Shrewsbury Abbey are introduced without a rubric.

In the light of these mistakes of the Domesday clerks it would not be wise to regard their manorial statistics as infallible, even if it were not proved in the case of Cambridgeshire, where their work can be checked by a copy of the original returns, that they not infrequently took out the figures in Roman numerals incorrectly. We may suspect something of the kind in such a Shropshire entry as occurs under Wigwig: 'Terra est ii carucis. Ibi est in dominio . . . ii villani et i bordarius cum dimidia caruca.'[167]

There are two instances of manors entered twice over. In the case of Sheinton an explanation of this duplication has already been offered;[168] for the double appearance of Richard's manor of 'Brochetone' it is less easy to suggest a reason.[169] At the end of Roger Venator's fief a manor ('Haustone') was omitted by the clerk and then inserted awkwardly lower down the column.[170]

The rubrication of the hundreds is, as has already been remarked, comparatively accurate and complete. But besides the omission of the rubric in the case of most of the earl's manors, for which we have attempted to account above, the occasional failure of the scribe to mark a change of hundred has been established by the identification of manor names.

It seems natural to suppose that the exchequer clerks in re-arranging the matter of the returns would have found it most convenient to follow the same sequence of the hundreds in extracting the manors of each fief. No such sequence can, however, be detected, and in fact they appear to have taken the hundred returns in haphazard order. Another difficulty in regard to the method of compilation is presented by the varied spelling of place-names which presumably appeared only once in the original returns. This is most

[164] Fol. 252*b*. [165] Fol. 260. [166] Fol. 254. [167] Fol. 258.
[168] See above, p. 289. [169] Fol. 257 and 259*b*. [170] Fol. 259.

observable, of course, in the names of the hundreds, which are frequently repeated. A striking instance in the Shropshire Domesday is the hundred of 'Alnodestreu.' This, the correct form, is found once in the body of an entry, but the rubrics give the variants, 'Elnoelstrui,' 'Elnoelstruil,' and 'Elnoelstrul.' It has been suggested in explanation of these divergences that Domesday, as we have it, was taken down by one clerk from the dictation of another. This, however, hardly accounts for the wide variation in the case quoted above, unless we suppose a change of scribes, one of whom had a better ear for English names than the other. It may be thought significant that the corrupt forms in this case occur only in the hundred rubrics, but these are usually so neatly dovetailed with half-lines of the text that it is difficult to suppose they were entered by a special rubricator, even if that were otherwise probable.

A closer study of the structure of the great survey as a whole may yet throw light upon these problems of its composition, as a rigorous examination of its substance is gradually helping to clear up many a baffling question of constitutional and economic antiquities.

## APPENDIX I

### THE LATER HUNDREDS OF SHROPSHIRE

At some time after the date of Domesday Book, but apparently before the accession of Henry II, the hundreds were re-arranged, and, with three exceptions, renamed. Shrewsbury Hundred, or Liberty as it came to be called, was enlarged at the expense of the neighbouring hundreds, especially Baschurch, which, under its new name of Pimhill, also lost the detached portions in the south-east of the county which belonged to it in 1086, as well as the parish of Ruyton of the Eleven Towns.[171] Ruyton was annexed to 'Mersete,' henceforth known as Oswestry Hundred.

The Domesday hundreds of Hodnet and Wrockwardine are represented in the main by the later hundreds of Bradford North and Bradford South, which include all that the older hundreds contained save two manors transferred to Shrewsbury liberty; but the boundary between the new hundreds placed a number of Hodnet manors in South Bradford and a number of Wrockwardine manors in North Bradford. More drastic changes were necessary in the south. Condover, indeed, lost only nine manors and retained its name. A complete revolution, however, was effected in the south-east, where the old arrangements were highly irregular and inconvenient. Out of the hundreds of 'Condetret' and 'Alnodestreu,' with the detached portions of Baschurch, part of Patton Hundred and Earl Roger's manors in the Staffordshire hundred of Seisdon, the two new and fairly compact hundreds of Brimstree and Stottesdon were contrived. The rest of Patton Hundred with the northern portions of Leintwardine Hundred and two Condover manors went to form the new hundred of Munslow. On the other hand 'Ovret' or Overs Hundred kept its name and most of its area, because the lords of Richard's Castle had the greatest manorial interest in it and the hundredal soke. Overs lost Earls Ditton, a member of Cleobury, to Stottesdon Hundred, but annexed Neen Sollars, of which it already contained a berewick, Milsom.[172] In the south-western hundreds fewer alterations were made. 'Rinlau' Hundred changed its name to Purslow, but its area remained much the same; the subtraction of Clun and Obley by the son or grandson of Picot de Say to form the independent honour or hundred of Clun[173] was compensated for by the annexation of a number of Leintwardine manors on its southern border. The hundred of 'Ruesset,' renamed after its new *caput* of Ford, lost five manors to Shrewsbury liberty, and a sixth (Bausley) became merged in the marches of Wales. Chirbury gave a new name to 'Witentreu' Hundred, whose area was much abbreviated by the creation of the honour of Montgomery.

[171] For the transfers effected here and elsewhere see Eyton's tables of the Domesday hundreds in the *Antiq. of Shropshire.*

[172] Eyton, op. cit. iv, 298.

[173] Ibid. xi, 228.

Stottesdon Hundred is mentioned about 1157, as if it were of some standing,[174] and Eyton seems to be justified in his argument that the reign or Henry I is the only likely period for the general re-arrangement of the hundreds between this date and that of Domesday Book.[175]

Some minor readjustments were afterwards effected in the border hundreds,[176] but the only great change was the erection or the manors of Wenlock Priory into a separate liberty in the reign of Richard I.

## APPENDIX II

### THE DOMESDAY POPULATION FIGURES

I have given here in one column Eyton's figures, and in a second my own counting.

| | Eyton. | Tait. |
|---|---|---|
| Tenants in capite | 9 | 8[177] |
| Under-tenants | 199 | 123*c.* |
| Milites | 14 | 34[178] |
| Francigenae | 33 | 33 |
| „ servientes | 3 | 3 |
| Liberi Homines | 14 | 16 |
| Franci „ | 2 | 2 |
| Quidam Franco | 1 | 1 |
| Homines | 21 | 51[179] |
| „ arantes | 3 | 3 |
| Hospites | 7 | 7 |
| Servientes | 6 | 6 |
| Inter francos et villanos | | 8[180] |
| Radmans | 167 | 174 |
| Radchenistri | 3 | 3 |
| Prepositi | 9 | 9 |
| Presbyteri | 50 | 53 |
| Fabri | 8 | 8 |
| Molinarius | 1 | 1 |
| Custos Apium | 1 | 1 |
| Villani | 1788 | 1801 |
| „ integri | 4 | 4 |
| „ dimidii | 9 | 9 |
| Viduae feminae | 2 | 2 |
| Carried forward | 2394 | 2360 |

| | Eyton. | Tait. |
|---|---|---|
| Brought forward | 2394 | 2360 |
| Bordarii | 1157 | 1149 |
| Cozets | 9 | 9 |
| Cotarii | 15 | 18 |
| Feminae Cotariae | 9 | 9 |
| Bovarii | 384 | 397 |
| Liber Bovarius | 1 | 1 |
| Coliberti | 13 | 13 |
| Servi | 871 | 879 |
| Ancillae | 52 | 49 |
| Inter servos et ancillas | | 78[180] |
| Walenses | 67 | 67 |
| Canonici in Sciropesberie | 28 | 12 |
| Canonici de Membrefelde | 8 | |
| Burgenses Francigenae in Civitate | 43 | 43 |
| Burgenses abbatis de Sciropesberie | 39 | 39 |
| Burgenses episcopi de Cestre | 6 | 6 |
| Burgenses pert. ad eccl. Sti. Almundi | 21 | 21 |
| Burgenses pert. ad eccl. Sti. Julianae | 2 | 2 |
| Burg. pert. ad manerium de Melam | 9 | 9 |
| Burgensis in Udecote | 1 | 1 |
| | 5080 | 5162 |

## APPENDIX III

### MISCELLANEOUS STATISTICS

| | | | |
|---|---|---|---|
| Demesne Plough-teams | 655⅜ | Mills | 92 |
| Villeins' „ | 1128¼ | Woods | 137 |
| Possible additional Plough-teams | 1389¼ | Hays | 79[181] |
| Churches | 25 | Eyries | 3 |

[174] Eyton, op. cit. iv, 242.

[175] Ibid. i, 23.

[176] E.g. Thomas Corbet established the independence of Worthen from Chirbury Hundred in 1326–7 (ibid. xi, 96). About 1400 we hear of a hundred of the Eleven Towns (Dugdale, *Bar.* i, 662).

[177] Exclusive of the abbey of St. Remy.

[178] This includes a number of *milites* reckoned by Eyton among the under-tenants.

[179] Including 33 in the dependent Welsh district of Yale.

[180] See below, p. 313.

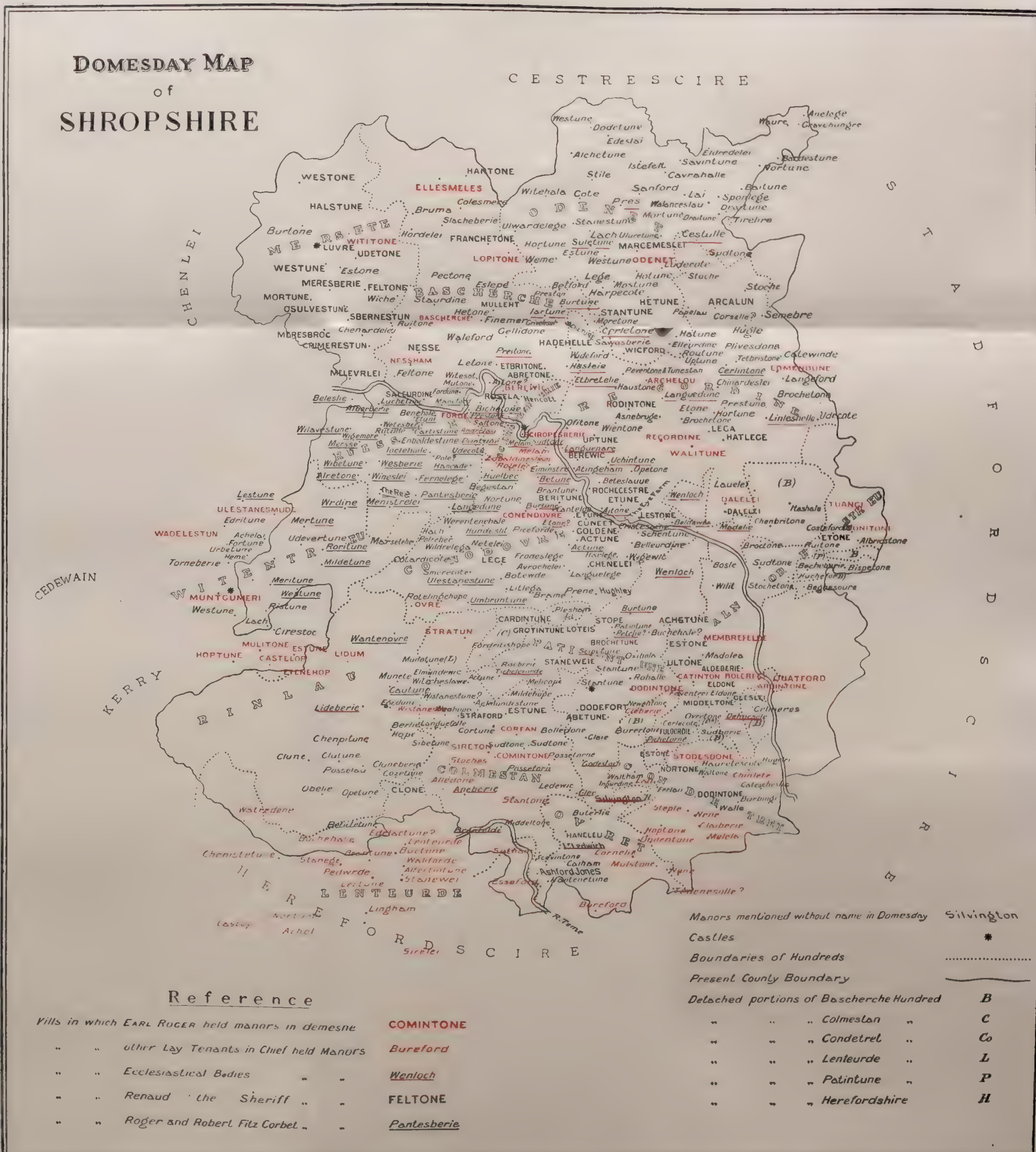
[181] Besides 5 T.R.E. at Clunbury.

# NOTE

The reader should bear in mind throughout that the date of the Domesday Survey is 1086; that the time of King Edward (here expressed as T.R.E.) normally means the date of his death (5 January, 1066); and that the intermediate date which is spoken of as 'afterwards' is that at which the estate passed into the hands of the new holder.

The Domesday hide was a unit of assessment divided into four quarters called 'virgates,' each of which was divided into a number of 'acres,' the number varying in different parts of England; these, however, were merely fiscal not areal measures. It should be noted that the translation in the following pages of the common formula 'Ibi x hidae geld'' is not quite exact. The last word must be expanded 'geldantes' and the whole phrase might best be Englished: 'There are x hides there that pay geld.'

'Demesne' was that portion of a manor which the holder (whether a tenant-in-chief or only an under-tenant) worked as a home farm with the help of labour due from the peasants who held the rest from him. But when the term 'demesne' is applied to a fief, it denotes those of its manors which remained in the baron's hands and were not held of him by under-tenants. The various classes of men on a manor are dealt with in the Introduction (see pp. 301–4), but it may be noted that the term 'oxherds' used in this translation for 'bovarii' must not be taken as defining the position of these 'ox men,' the nature of whose connexion with oxen is obscure. A 'berewick' was an outlying estate dependent on the chief manor. The essential element of the plough (*caruca*) was its team of oxen, always reckoned in Domesday as eight in number. The 'league' of the record appears to have been a mile and a half long, but the woodland measurements in leagues must not be regarded as anything but the roughest estimates. It is necessary to keep in mind that when Domesday speaks of a place as held by a certain tenant, it does not follow that the whole of it is thereby meant. For the vills sometimes comprised other manors which form the subject of separate entries.



DOMESDAY MAP of SHROPSHIRE
CESTRESCIRE
STADFORDSCIRE
HEREFORDSCIRE
CHENLEI
CEDEWAIN
KERRY
Reference
Vills in which Earl Roger held manors in demesne COMINTONE
" " other Lay Tenants in Chief held Manors Bureford
" " Ecclesiastical Bodies Wenloch
" " Renaud the Sheriff FELTONE
" " Roger and Robert Fitz Corbet Pantesberie
Manors mentioned without name in Domesday Silvington
Castles
Boundaries of Hundreds
Present County Boundary
Detached portions of Bascherche Hundred B
" " " Colmestan " C
" " " Condetret " Co
" " " Lenteurde " L
" " " Patintune " P
" " " Herefordshire H

## Reference

*Vills in which* EARL ROGER *held manors in demes*

" " *other Lay Tenants in Chief held Ma*

" " *Ecclesiastical Bodies* "

" " *Renaud the Sheriff* "

" " *Roger and Robert Fitz Corbet* "

# SCIROPESCIRE

In the City of Sciropesberie [Shrewsbury] in the time of King Edward (T.R.E.) there were 252 houses, and the same number of burgesses in those houses, rendering yearly 7 pounds, 16 shillings and 8 pence of burgage rent (*de gablo*). There King Edward had these under-mentioned customs[1]:—

If any person wittingly infringed the king's peace imposed by the (king's) own hand he became an outlaw; but he who infringed the king's peace imposed by the sheriff paid 100 shillings; and he gave as much who committed *forestel* or *heinfare*.[2] King Edward had these three forfeitures in (his) demesne all over England over and above the ferms (*firmas*).

When the king lay in this city, twelve citizens of the better class (*homines de melioribus civitatis*) had to serve him as guards (*vigilantes*), and when he went a hunting there the better class burgesses possessing horses (*meliores burgenses caballos habentes*) guarded him armed, in like manner. But to the beating of the woods[3] (*stabilitionem*) the sheriff sent 36 footmen as long as the king stayed there. At the park of Marsetelie[4] [? Marsley] however (the sheriff) had to find 36 men for 8 days by custom. When the sheriff decided to march into Wales, anyone who after being warned by him did not proceed forfeited 40 shillings.

A woman accepting a husband in any way gave to the king, if she was a widow, 20 shillings, if a maiden, 10 shillings, in whatever way she accepted the man.

Should the house of any burgess be burnt by accident or misfortune or by negligence he paid 40 shillings to the king by way of forfeit and 2 shillings to each of his two nearest neighbours.

When a burgess who was in the king's demesne died, the king had by way of relief (*relevamentum*) 10 shillings. If any burgess did not appear at the time (*frangebat terminum*) which the sheriff fixed for him, he paid 10 shillings fine.

Whosoever shed blood paid 40 shillings fine.

When the king left the city the sheriff used to send 24 horses with him (as far as) Lenteurde [Leintwardine]; and the king took the same with him

[1] Cf. the Worcester customs; *V.C.H. Worc.* i, 282.

[2] 'Forsteal' was waylaying or (attack from) ambush; 'hámfare' was attack on a man's house. These, like breach of the peace, were pleas of the crown, usually reserved; Pollock and Maitland, *Hist. of Engl. Law* (1895), ii, 451–6, 466, 491.

[3] 'A besetting of a wood for the purpose of taking deer or other beasts'; Turner, *Select Pleas of the Forest*, 148.

[4] Probably Marsley in Habberley; Eyton, *Shrops.* vii, 45.

as far as the first manor (*mansionem*) in Strafordscire [Staffordshire].[5] Three moneyers the king had there, who, after they had purchased their money-dies (*cuneos*), as the other moneyers of the kingdom did, on the fifteenth day paid to the king 20 shillings each, and this was done on any change of the coinage (*moneta vertente*).

In all this city paid annually 30 pounds. Two parts the king had, and the third the sheriff (had). In the year before this survey (*descriptionis*) it yielded 40 pounds to Earl Roger.[6]

This city, in the time of King Edward, was assessed at 100 hides; of which St. Almund had 2 hides; St. Juliana ½ hide; St. Milburga 1 hide; St. Cedd 1½ hides; St. Mary 1 virgate; the bishop of Chester 1 hide: (Queen) Edith (*Ediet*) 3 hides which Ralph de Mortemer (now) holds.

The English-born burgesses of Shrewsbury maintain that it is very hard on them (*multum grave sibi*) that they now pay the same geld (*geldum*) as they used to pay in the time of King Edward, although the earl's castle has occupied (the area of) 51 burgages (*masuras*) and other 50 are waste, and 43 French-born burgesses occupy burgages geldable in the time of King Edward, and the earl has granted to the abbey which he is forming (*facit*) there 39 burgesses formerly geldable in like manner with the others. In all there are 200 burgages all but 7 which (now) do not pay geld.[7]

## HERE ARE SET DOWN THOSE WHO HOLD LAND OF THE KING IN SHROPSHIRE

I The bishop of Chester
II The bishop of Hereford
III The church of St. Remy
IV Earl Roger
V Osbern son of Richard
VI Ralph de Mortemer
VII Roger de Laci
VIII Hugh Lasne
IX Nigel the Physician

what remains he holds with his own men

### I. THE LAND OF THE BISHOP OF CHESTER

The bishop of Chester held in SCIROPESBERIE [Shrewsbury] 16 burgages (*masuras*) and an equal number of burgesses geldable with the rest of the burgesses. Now 10 of these burgages are waste and the other 6 render 4 shillings and 7 pence.

The same bishop used to have in this city 16 canons. They did not pay geld, nor is it known how much they rendered to the bishop.

The same bishop holds a manor MELAM [Meole[8]] in the hundred of the city. It is not, and never was, inhabited (*hospitatus*). T.R.E. it used to pay 20 shillings, now 17 shillings and 4 pence.

The same bishop holds SALTONE [Shelton] in the same hundred, and the church of St. Cedd (holds) of him. There (are) 1½ hides. In demesne is ½ plough, and 2 more ploughs might be (employed). There 4 villeins have 1½ ploughs. It was and is worth 12 shillings. This land is geldable (*geldat*).

[5] Apparently this means that if the king went south by the Roman road of Watling Street he had the use of the horses as far as Leintwardine on the border of Herefordshire, but if eastwards, by the other Watling Street, he had their use as far as the Staffordshire border. [This is a difficult passage and possibly corrupt. As it stands it seems to describe one journey, not two. Yet Leintwardine is certainly not a convenient halfway house between Shrewsbury and Staffordshire. J. T.]

[6] See Introduction, pp. 294–5. [7] See Introduction, p. 295. [8] Crow- and Monk-Meole.

In Recordine [Wrockwardine] Hundred

The same bishop holds Languenare [Longner-on-Severn] and Wigot (holds) of him. There (is) 1 hide. There is land for 2 ploughs. There is 1 in demesne and 2 serfs, and 2 villeins have 1 plough. It was and is worth 8 shillings.

In Conodovre [Condover] Hundred

The same bishop holds Betune [Betton] and he held it T.R.E. There 2 hides pay geld. In demesne are 1½ ploughs, and 4 villeins with 2½ ploughs. 3 serfs are there. It was worth 15 shillings, now 16 shillings.

The same bishop holds Beldewes [Buildwas] and held it T.R.E. There 1 hide pays geld. In demesne are 2 ploughs, and 3 villeins with a reeve (*preposito*) have 3 ploughs. 5 serfs are there, and a mill and wood(land) for (fattening) 200 swine. T.R.E. it was worth 45 shillings afterwards 40 shillings, now 45 shillings.

In Hodenet [Hodnet] Hundred

The same bishop holds Pres [Prees] and held it T.R.E. There 8 hides pay geld. In demesne are 3 ploughs; and (there are) 10 villeins and a priest and three bordars with 5 ploughs. 6 oxherds are there, and wood(land) for 60 swine. Anschitil holds of the bishop ½ hide of this manor and Fulcher 2 hides. In demesne they have 2 ploughs, and (there are) 2 villeins with 1 plough, and 3 other men tilling there render 10 shillings, and 2 oxherds (are also) there. The whole T.R.E. was worth 50 shillings and afterwards it was waste. Now that which the bishop holds is worth 40 shillings. That which his men hold 28 shillings. Six ploughs more might be there (employed).

In Recordine [Wrockwardine] Hundred

The same bishop holds Cesdille [Chesthill[9]] and he held it. There is 1 hide and 1 virgate of land. There is land for 2 ploughs. It was worth 8 shillings. Now it is waste.

## II. THE LAND OF THE BISHOP OF HEREFORD

In Derinlau [ ] Hundred

The bishop of Hereford holds of the king Lideberie [Lydbury North], and he held it T.R.E. There 53 hides pay geld. In demesne there are 4 ploughs. And (there are) 38 villeins and 4 bordars and 8 radmans with 28 bordars. They have among them all 23 ploughs. Two serfs are there, and a mill supplying the manor-house (*aule*). There is wood(land) for fattening (*incrassandis*) 160 pigs.

Of this manor a certain Frenchman (*Franco*[10]) and William the Clerk hold a member (*membrum*) and the church of the same manor with the priests and with the land pertaining thereto, and there is 1 plough. In this manor there might be 92 ploughs more than there are. It was worth 35 pounds T.R.E. Afterwards 10 pounds, now 12 pounds. Of this land 32½ hides are waste.

In Colmestan [ ] Hundred

The same bishop held Aneberie [Onibury], and now Roger de Laci holds it of him. There 3 hides pay geld. In demesne there is 1 plough and (there are) 4 whole villeins (*integri*) and six half (-villeins)[11] (*dimidii*) and a priest and 1 cotter (*cozet*) with 3 ploughs. One serf is there. A knight (*miles*) holds 1 hide there and has 1 plough and 5 villeins. T.R.E. there were in this manor 9 ploughs, and it was worth 40 shillings, now 20 shillings.

## III. THE LAND OF ST. REMIGIUS[12]

In Ovret [Overs] Hundred

The church of St. Remigius held and (still) holds of the king one manor of 1 hide, and there were and are 2 ploughs. It was and is worth 10 shillings and 8 pence.

fol. 252*b*.

(What the Church of St. Peter Holds)

In Shrewsbury city (*civitate*) Earl Roger is making an abbey and has given to it the minster of St. Peter, where there was a parish of the city: and (also has given to it) as many of his burgesses and mills as yield 12 pounds (annually) to the monks.

In Recordine [Wrockwardine] Hundred

The same church holds Aitone [Eyton-on-Severn]. Earl Leuric held it T.R.E. There are 8½ hides. In demesne there are 4 ploughs and there might be 2 more. There (are) 16 villeins and 14 bordars with 16 ploughs; 8 serfs and 4 bondwomen (*ancille*) are there, and 2 fisheries. One renders 16 shillings, the other is

[9] Now lost; included Tern Hill; see Eyton, *Shrops.* viii, 200.

[10] Or perhaps more probably 'a free man.'

[11] Variously explained as (1) holders of moieties of villein tenements, (2) half *liberi* half *villani* (Ellis, *Introd. to Dom. Bk.* i, 81), and (3) villeins under divided lordship (Maitland, *Dom. Bk. and Beyond*, 74). The last interpretation does not seem particularly applicable here.

[12] St. Remy of Rheims.

for the sustenance of the monks. T.R.E. it was worth 21 pounds, and when the earl gave it to the church it was yielding 14 pounds.

### In Conodovre [Condover] Hundred

The same church holds Eiminstre [Emstrey]. Earl Edwin held it. There 9 hides pay geld. In demesne there are 4 ploughs, and (there are) 22 villeins and 5 bordars and one French-born (man) with 12 among them all. There are 20 serfs, and wood(land) for fattening 40 swine. In the city there is one burgage property (*masura terre*) yielding (de) 2 shillings (annually). T.R.E. it was worth 100 shillings and afterwards 4 pounds. Now 11 pounds.

In this vill Aluric held one hide paying geld and could go whither he would and this land was worth 5 shillings. Now St. Peter holds it and it is waste.

The same church holds Burtune [Bourton] and held it T.R.E. There 1 hide pays geld. In demesne is 1 plough, and (there are) 6 bordars with 1 plough, and (there are) 2 oxherds there. It was worth 5 shillings, now 8 shillings.

### What the Church of St. Milburga holds in Patintune [Patton] Hundred

Earl Roger has made the church of St. Milburga into an abbey. The same church holds Wenloch [Much Wenlock] and held it T.R.E. 20 hides are there. Of these 4 were quit of geld T.R.Chnut, and the others were geldable. In demesne there are 9½ ploughs. And (there are) 9 villeins and 3 radmans and 46 bordars. Among them all they have 17 ploughs and other 17 might be there. There are 15 serfs, and 2 mills serving the monks. One fishery is there and wood(land) for fattening 300 swine, and there are 2 hayes (*haie*). T.R.E. it was worth 15 pounds, now 12 pounds.

The same church holds Tichelevorde [Ticklerton[13]] and held it T.R.E. There are 7 hides paying geld, and 3 other hides quit of geld. In demesne there is 1 plough. And (there are) 6 villeins and 6 bordars and 1 radman with 5 ploughs, and 6 ploughs more might be there (employed). There are 3 serfs, and wood(land) for fattening 60 swine. T.R.E. it was worth 100 shillings, now 50 shillings.

The same church holds Madelie [Madeley] and held it T.R.E. There is 1 hide not paying geld and 3 other hides paying geld. In demesne there are 2 ploughs, and (there are) 6 villeins and 4 bordars with 4 ploughs. There are 4 serfs, and 6 ploughs more might be there. There is wood(land) for fattening 400 swine. T.R.E. it was worth 4 pounds, now 50 shillings.

The same church holds Wenloch [Little Wenlock] and held it T.R.E. There there is 1 hide not paying geld and other 2 paying geld. In demesne there is 1 plough, and (there are) 4 villeins and 2 bordars with 3 ploughs. Two oxherds are there and wood(land) for fattening 300 swine, in which wood are 2 hayes and an eyrie of falcons (*aira accipitris*). T.R.E. it was worth 70 shillings, now 40 shillings.

The same church held and (still) holds Scipetune [Shipton]. There is ½ hide not paying geld and 3 other hides paying geld. In demesne there is 1 plough, and (there are) 5 villeins and 5 bordars with 5 ploughs, and (there are) 2 serfs. It was worth 30 shillings, now 4 pence more.

The same church held and holds Petelie [ ]. There is ½ hide not paying geld. In demesne there is 1 plough and 3 bordars with 1 plough and 2 serfs and wood(land) for fattening 40 swine, and 1 haye is there. It was worth 8 shillings, now 6 shillings.

The same church held and holds Burtune [Bourton] and Edric (holds) of it. Aluric his father held it and could not withdraw himself from the church. There there are 2 hides and 3 virgates of land paying geld. In demesne there is ½ plough, and (there are) 4 villeins and 4 radmans and 3 bordars with 3½ ploughs, and 1 serf, and a mill supplying the manor-house (*curie*), and 1 haye. T.R.E. it was worth 50 shillings, now 40 shillings; and 2 ploughs more could be (employed).

The same church held Godestoch [Stoke St. Milborough]. Earl Roger gave (it) to his chaplains, but the church ought to have it. There there are 20 hides of which 3 do not pay geld, but the others pay geld. In demesne there are 2 ploughs, and (there are) 25 villeins and 5 bordars with 9 ploughs. And (there are) 4 oxherds; and 19 ploughs more could be there (employed). T.R.E. it was worth 13 pounds, now 9 pounds.

### In Elnoelstrul [ ] Hundred

The same church held and holds Dehocsele [Deuxhill]

There ½ hide pays geld. In demesne there is 1 plough; and (there are) 2 bordars and 1 cottar with 1 plough, and there is 1 serf. It was worth 10 shillings, now 20 shillings.

The same church held and holds Pichetorne [Pickthorn]. There ½ hide pays geld. In demesne there is 1 plough, and (there is) 1 villein and 2 bordars with 2 ploughs, and (there) are 2 serfs. It was and is worth 7 shillings.

[13] With Eaton-under-Heywood.

In Sciropesberie [Shrewsbury] Hundred

The same church held and holds Sudtone [Sutton]. There there is 1 hide. There there are 8 men, counting (*inter*) freemen (*francos*) and villeins, with 4 ploughs. It was worth 12 shillings, now 16 shillings.

In Culvestan [ ] Hundred

The same church held and holds Clee [Clee Stanton]. There there are 2 hides. There there is 1 man and 1 plough, and 6 other ploughs might be (there employed). It was worth 18 shillings, now 6 shillings.

In Conodovre [Condover] Hundred

St. Witburga [i.e. Milburga] holds ½ hide[14] paying geld, and Aluric's son holds of him (*eo*). There there is 1 villein with 1 plough, and another might be there. It is worth 3 shillings.

What the Church of St. Mary holds in Bascherche [Baschurch] Hundred

The church of St. Mary held and holds Burtune [Broughton[15]]. There 5 hides pay geld. One priest there has ½ plough, and (there are) 7½ villeins with 2½ ploughs, and 3 ploughs more might be there (employed). Wood(land) there for fattening 24 swine. It was worth 10 shillings, now 15 shillings.

The same church held and holds Hesleie [Astley]. There 3 hides pay geld. There a priest with 9 villeins and 2 bordars have 3 ploughs, and 2 ploughs more might be (employed). Wood(land) for fattening 50 swine. It was worth 20 shillings, now 25 shillings.

In Sciropesberie [Shrewsbury] Hundred

The same church held and holds 1 virgate of land in Melam [Meole Brace], a manor of Ralph de Mortemer. It was and is worth 4 shillings.

In Ovret [Overs] Hundred

The same church held and holds ½ hide. It was and still is waste.[16]

In Bascherche [Baschurch] Hundred

The same church held and holds Mutone [Mytton] and Picot holds of it (*ea*). There 2 hides pay geld. There there are 4 villeins with 2 ploughs. It was worth 12 shillings, now it is at farm for 11 shillings.

The same church[17] holds Brunfelde [Bromfield], and there it stands (*consistit*). There are now 10 hides, and in demesne 6 ploughs and 12 oxherds, and (there are) 15 villeins and 12 bordars with 8 ploughs. It is worth 50 shillings to the canons, and Nigel the Physician has out of this manor 16 shillings. In this manor T.R.E. there were 20 hides, and 12 canons of the same church had the whole. One of them Spirtes by name alone held 10 hides, but when he was banished from England King Edward gave these 10 hides to Robert son of Wimarch as to a canon. Robert however gave the same land to his son-in-law. When the canons pointed this out to the king, he forthwith ordered that the land should revert to the church ; only delaying until, at the court at the coming Christmas, he should order Robert to provide other land for his son-in-law. But the king himself died at the very time of that feast (*in ipsis festis diebus*), and from that time until now the church has lost the land. This land Robert now holds under Earl Roger and it is waste and was found waste. In all there is land (sufficient) for 54 ploughs.

What St. Michael Holds

The church of St. Michael holds of the earl Possetorn [Lower Poston.] Chetel held it. There is 1 virgate of land. There is land for ½ plough. One man renders thence a bundle of box (*fascem buxi*) on Palm Sunday.

(In Hodnet Hundred)

The same church holds Suletone [Soulton]. Brictric held it freely. There 1 hide pays geld. Land for 1 plough. There is half a plough there. It was worth 5 shillings, now 4 pence more.

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What St. Chad (*Cedda*) Holds

In Conodovre [Condover] Hundred

The church of St. Chad holds and used to hold Etone [Little Eaton], and Turold holds of it : half a hide pays geld there. It used to yield 8 shillings, now 4 shillings.

In Witentrei [ ] Hundred

The same church holds and used to hold Mertune [Marton]. Elward holds it of the church. There 2 hides pay geld. In demesne there is ½ plough, and (there are) 3 villeins and 3 radmans and one bordar with 3½ ploughs, and 2 ploughs more might be (employed). There is wood(land) for fattening 50 swine. T.R.E.

[14] Perhaps Hughley ; Eyton, *Shrops.* vi, 302. Edric son of Aluric held Bourton of the priory (see above).

[15] Not Broughton proper, but Clive and Sansaw, which were still in the parish of St. Mary in Eyton's time (op. cit. x, 160).

[16] Lower Ledwich. It belonged to St. Mary of Bromfield, but like Bromfield itself is here confused with the lands of St. Mary of Shrewsbury.

[17] An error ; St. Mary of Bromfield, not of Shrewsbury.

it used to yield 8 shillings. Now it is worth 10 shillings, but pays no more than 6 shillings and 2 pence.

### In Bascherche [Baschurch] Hundred

The same church used to hold Bichetone [Bicton]. Wiger holds of it. There 2 hides pay geld. In demesne there is 1 plough and (there are) 4 villeins and 1 free man with 2 ploughs, and other 2 might be (employed). It was worth 10 shillings, now 15 shillings.

The same church held and holds Iartune [Yorton]. There 2 hides pay geld. There is land for 4 ploughs. There (is) a priest and 1 villein with 1 plough. It was worth 8 shillings, now 5 shillings.

The same church held and holds Burtone [Broughton]. There 2 hides pay geld. There is land for 5 ploughs. There 3 villeins have 2 ploughs. It was worth 10 shillings, now 11 shillings and 2 pence.

The same church held and holds Rosela [Little Rossall]. There 1 hide pays geld. Two radmans with 7 bordars have 3½ ploughs. It was worth 8 shillings, now 15 shillings.

The same church held and holds Andrelau [Onslow[18]]. There 1 hide pays geld. It was waste. There 3 villeins have 1 plough. It is worth 4 shillings.

### What St. Almund Holds

The church of St. Almund holds in Sciropesberie [Shrewsbury] 21 burgesses, besides 12 houses for canons. These burgesses render 8 shillings and 8 pence. The same church holds 2 hides [Hencott] of the 100 hides which are reckoned in the geld of the city. Two canons hold these and have there 1½ ploughs and (have) 4 villeins possessing 2½ ploughs. It is worth 15 shillings.

### In Recordin [Wrockwardine] Hundred

The same church held and holds Linleshelle [Lilleshall]. There are 10 hides. In demesne there are 2 ploughs and (there are) 10 villeins and 5 bordars and 3 French-born serjeants with 8 ploughs among them all, and 9 ploughs more might be (employed). 4 oxherds are there, and a mill, but it yields nothing. Of wood(land) 1 league T.R.E. it was worth 6 pounds, now 4 pounds. Godebold the priest holds it.[19]

The same church held and holds Languedune [Longdon upon Tern]. There are 2 hides. In demesne there is 1 plough and 4 bordars with 1 plough, and 3 ploughs more might be (employed). There (are) altogether (*inter servos et ancillas*), 6 serfs and bond women and a mill of 5 shillings (annual value). T.R.E. it was worth 21 shillings, now 9 shillings and 4 pence.

The same church held and holds Uchintune [Uckington] and Godebold (holds) of it. There 4 hides pay geld. In demesne there are 3 ploughs and (there are) 2 radmans and 3 bordars with 1 plough, and 3 ploughs more might be (employed). There are 6 oxherds. T.R.E. it was worth 24 shillings, now 30 shillings.

The same church held and holds Atingeham [Atcham] and Godebold (holds) of it. One hide is there. In demesne there are 1½ ploughs and (there are) 2 villeins and 3 bordars with 3 ploughs. It was worth 10 shillings, now it yields 6 shillings and 8 pence.

The same church held and holds Etbretelie [Albrightlee]. One hide is there. In demesne there is 1 plough and (there are) 2 villeins and 1 bordar with 1 plough. There (was) 1 league (*leuuede*) of wood(land), but Earl Roger took it from the church. It was and is worth 12 shillings.

### In Bascherche [Baschurch] Hundred

The same church held and holds Prestone [Preston Gubbals[20]]. Godebold (holds) of it. There are 4 hides. In demesne there is 1 plough and (there are) 2 villeins and 3 bordars, and 2 French-born men with 2 ploughs, and other 2 ploughs might yet be (employed). It was waste, now it is worth 10 shillings.

### In Culvestan [ ] Hundred

The same church held and holds Cerletone [Charlton].[21] There is 1 hide there. One radman was and is still there. It used to yield 4 shillings, now 5 shillings.

### In Ruesset [ ] Hundred

The same church held and holds Prestune [Preston Montford]. There 1 hide pays geld. In demesne there is 1 plough and (there are) 2 villeins with 1 plough. It was worth 8 shillings, now 5 shillings. Elward holds it.

[18] Formerly 'Ondeslawe,' Eyton, *Shrops.* vii, 172.

[19] For Godebold, who occupied so many St. Alkmond estates, which suggests that he was something more than a canon, or even dean, of the church, see Eyton, op. cit. viii, 210.

[20] Corruption of Godebold. For this 'sapiens clericus' of Earl Roger, see Orderic Vitalis, *Hist. Eccl.* ii, 220.

[21] Perhaps Charlton near Shawbury, though this was in Wrockwardine *not* Culvestan hundred; the situation is known, but the name appears to be now lost; Eyton, *Shrops.* viii, 250.

The same church held and holds DUNTUNE [Dinthill].[22] There 1 hide pays geld. In demesne there is 1 plough and (there is) 1 villein and 1 bordar with ½ plough. It was and is worth 8 shillings.

### WHAT ST. JULIANA HOLDS

The church of St. Juliana holds ½ hide (at Shelton). It has there 1 plough and 2 burgesses labouring on this land. They render 3 shillings. It was and is worth 8 shillings.

## IV. THE LAND OF EARL ROGER

### IN RECORDINE [WROCKWARDINE] HUNDRED

Earl Roger holds RECORDINE [Wrockwardine]. King Edward held it. To this manor pertain 7½ berewicks. There 5 hides pay geld. In demesne there are 4 ploughs and 13 villeins and 4 bordars and a priest and 1 radman. Among them all they have 12 ploughs; 8 oxherds are there and a mill of 12 shillings (value). There is wood(land) 1 league long and ½ league broad. The church of St. Peter holds the church of this manor with 1 hide and has there 1 plough and there might be another. It is worth 5 shillings. To this manor pertained T.R.E. two pennies of the hundred of Recordin. The earl had the third penny. T.R.E. it yielded 6 pounds and 13 shillings and 8 pence. Now it yields 12 pounds and 10 shillings of ferm.

### IN CONEDOVRE [CONDOVER] HUNDRED

The same earl holds CONENDOVRE [Condover]. King Edward held it. To this manor pertain 10 berewicks. There 13 hides pay geld. In demesne there are 7 hides and 4 ploughs are there, and (there are) 12 villeins and a priest with 7 ploughs, and 3 ploughs more might be there (employed). 8 oxherds are there, and a mill of 8 shillings and 6 pence (annual value). To this manor pertained 2 pennies of the hundred of Conendovre T.R.E. It used to yield 10 pounds. Now with the hundred it yields 10 pounds. Roger Venator holds 1 hide of this manor, Osbern 1 hide, Elward 4 hides. There is 1 plough, and 4 villeins and 2 bordars and 3 radmans and 2 oxherds. Among them all they have 3 ploughs, and 8 ploughs more might be (employed). The whole is worth 41 shillings.

### IN BASCHERCHE [BASCHURCH] HUNDRED

The earl himself holds BASCHERCHE [Baschurch]. King Edward held it. There are 3½ hides. One of these is in demesne and 4 ploughs are there, and (there are) 6 villeins and 2 bordars with 2 ploughs. 8 oxherds are there and 3 fisheries of 22 pence (annual value). To this manor pertained 2 pennies of the same hundred. As a whole (*inter totum*) it used to yield 7 pounds, now the demesne of the earl is worth 6 pounds. Of this manor the church of St. Peter holds 2½ hides and (also) the church of the vill. There is land for 5 ploughs which are there with 13 bordars. It is worth 26 shillings and 8 pence.

The earl himself holds ODENET [Hodnet]. King Edward held it. There are 1½ hides. In demesne are 3 ploughs, and (there are) 12 villeins and 2 bordars and a priest and a reeve with 7 ploughs, and 9 ploughs more might be there (employed). A little wood is there yielding nothing. The church of St. Peter holds the church of this manor. T.R.E. this manor yielded 3 pounds and 6 shillings and 8 pence; now, with the hundred which pertains to the manor, it yields 8 pounds.

The earl himself holds MEMBREFELDE [Morville] with 18 berewicks. King Edward held it. There are 12 hides. One of these berewicks, Calvestone [ ],[23] of 1 hide is in Wirecestrescire [Worcestershire]. 4 hides of this land are in demesne and 2 ploughs are there and 6 other ploughs might be (employed). There are 9 villeins and 6 bordars with 3 ploughs, and still 2 others might be (employed); 4 oxherds are there.

To this manor pertains the whole hundred of ALNODESTREU [ ]. Two pennies were King Edward's and the third was the earl's. As a whole it used to yield 10 pounds. Now what the earl has is worth 3 pounds.

The church of this manor is in the honour of St. Gregory, which (church) used to hold T.R.E. 8 hides of this land, and 8 canons served there. The church of St. Peter (now) holds this church of the earl with 5 hides of land. In demesne there are 2 ploughs, and 4 others might be there (employed). There are 9 villeins and 1 bordar and 3 priests, with 9 ploughs. And there are 4 oxherds; and one knight (*miles*) holds 1 hide, rendering 4 shillings to the monks. The whole of this is worth 67 shillings.

The chaplains of the earl hold the remaining 3 hides, and 5 men (hold) of them. There is land for 6 ploughs, 2 ploughs are there. The whole is worth 60 shillings and 18 pence. Richard the Butler (*Pincerna*) holds 2 hides of this same land of this manor, and has there 1 plough and 2 serfs, and (there are) 7 villeins with 1 plough and there is a mill yielding 10 horse-loads (*summas*) of grain (*annonae*). There might be 9 ploughs more there. It is worth 20 shillings.

The earl himself holds CORFAN [Corfham]. King Edward held it with 4 berewicks. There

[22] See Eyton, *Shrops.* viii, 197.

[23] See Introduction, p. 286.

4 hides pay geld. There are 5 ploughs in demesne and 6 (more) might be employed. 3 villeins and 3 bordars there have 3 ploughs, and there might be 2 ploughs more. 10 oxherds are there. Of this land a knight of the earl holds ½ hide and has there 1 plough and 2 serfs and 2 villeins with 1 plough. It is worth 5 shillings.

The church of St. Peter holds the church of this manor with 1 hide. There is land for 3 ploughs. It yields 18 shillings to the monks.

To this manor pertains the whole hundred of COMESTANE [24] [ ] and the hundred of PATINTON [Patton]. It yielded T.R.E. with the 2 pennies of the hundreds 10 pounds by way of ferm. Now with the hundreds it yields to the earl 6 pounds.

The earl himself holds MENISTRELIE [Minsterley] and Roger [25] (holds) of him. King Edward held it. There 6 hides pay geld. In demesne are 2 ploughs and other 2 might be (employed). 8 villeins are there, and 4 bordars with 8 ploughs and 4 oxherds are there. There are 2 leagues of wood(land). T.R.E. it was worth 60 shillings. Now 5 shillings more.

The earl himself holds ALRETONE [now Cause [26]] and Roger (holds) of him. King Edward held it. There 20 hides pay geld. There is land for 40 ploughs. With the exception of 2 hides it was waste. In demesne there is 1 plough, and 5 villeins with 1 free man have 3 ploughs. And certain Welshmen (*Walenses*) labouring there pay 16 shillings. There are 2 leagues (*leuuedes*) of wood(land). Waste land is there (sufficient) for 31 ploughs. In this manor 5 of Roger's knights have 6½ ploughs in demesne and there are 2 villeins and 6 bordars and 2 Welshmen, and one radman with 3 bordars and 6 oxherds, among them all they have 3 ploughs. T.R.E. it used to pay 8 shillings, now altogether (*inter totum*) 4 pounds.

The earl himself holds ALBERBERIE [Alberbury] and Roger (holds) of him. King Edward held it. There is 1 hide. In demesne there is 1 plough, and (there are) 8 bordars with 2 ploughs and 2 oxherds. To this manor pertains the hundred of REWESET [ ]. T.R.E. it was worth 5 shillings, now 20 shillings.

The earl himself holds CIREBERIE [Chirbury]. King Edward held it. In demesne there are 4 ploughs, and 13 villeins with a reeve have 5 ploughs. 8 oxherds are there. Two churches are there with a priest, and he has 1 plough.

To this manor pertains WITETREV [ ] HUNDRED. T.R.E. it was waste. Now it is worth 40 shillings.

The earl himself holds MERESBERIE [Maesbury] with 5 berewicks, and Rainald (holds) of him. King Edward held it. There 7 hides pay geld. There Rainald has built the castle of LUVRE [Oswestry]. In demesne he has 2 ploughs. And (there are) 10 Welshmen, with a priest, having 8 ploughs, and 6 ploughs more might be (employed). There is a church there. 4 oxherds are there, and there is some little wood(land) there yielding nothing. Of this land Robert holds ½ hide and Hengebald 2 hides, and they have 2 ploughs.

To this manor pertains the HUNDRED of MERSETE [ ].[27] T.R.E. it was waste. Now it is worth 40 shillings.

The earl himself holds WITITONE [Whittington] with 8½ berewicks. King Edward held it. There 18 hides pay geld. There is land for 25 ploughs. In demesne there are 6 ploughs and (there are) 15 villeins and 6 bordars with 12 ploughs. 12 oxherds are there and some Welshmen pay 20 shillings, and a mill is there of 5 shillings (annual value). Of wood(land) there is 1 league (*leuuede*). T.R.E. it was waste. Now it yields 15 pounds and 15 shillings. In the time of Ethelred (*Adelred*), father of King Edward, these 3 manors used to pay half a night's ferm.

Tuder, a certain Welshman, holds of the earl a district of Welsh land (*finem terre Walensis*) and renders therefor 4 pounds and 5 shillings.[28]

The earl himself holds LIDUM [Lydham]. T.R.E. Edric Saluage held it. There 15 hides pay geld. In demesne there are 4 ploughs, and 14 villeins with a reeve and a priest and with 6 bordars have 10 ploughs, and there might be there 16 ploughs more. 6 radmans are there, and a mill paying 1 pig. Of wood(land) there are 2 leagues (*leuuedes*). T.R.E. it was worth 10 pounds, now 14 pounds.

At the castle of MONTGOMERI [Montgomery] the earl himself has 4 ploughs, and he has 6 pounds of pence from a certain district of Wales (*de uno fine de Walis*) belonging to the same chatellany. Roger Corbet has there 2 ploughs, and from Wales he and his brother have 40 shillings.

The earl himself holds FORDE [Ford]. Earl Edwin held it with 14 berewicks. 15 hides are there. In demesne there are 10 ploughs, and

[24] Or Culvestan.

[25] Roger son of Corbet.

[26] See Eyton, *Antiq. of Shrops.* vii, 5–6. The name Cause appears to have been given when the castle was founded by Roger Fitz Corbet, whose family came from Caux; cf. Earl Roger's castle of 'Montgomery.'

[27] Now Oswestry.

[28] This is perhaps part of Maelor Saesneg; Eyton, *Shrops.* xi, 48–9. See Introduction, p. 287.

20 serfs and 6 bondwomen, and (there are) 50 villeins and 14 bordars with 29 ploughs. A mill there yields 3½ 'ores.' A fishery (yields) 2 shillings. T.R.E. it yielded 9 pounds, now 34 pounds.

The earl himself holds NESSHAM [Great Ness or Ness Strange]. Earl Morcar held it with 4 berewicks. 5 hides are there. In demesne there are 5 ploughs and 10 oxherds and (there are) 15 villeins and 5 bordars with 6 ploughs, and there might be 3 ploughs (more). 6 Welshmen there pay 20 shillings. There is one league (*leuua*) of wood(land). The church of St. Peter holds the church of this manor with one virgate of land. One Robert has 4 villeins who pay 5 shillings. T.R.E. it yielded 3 pounds, now 13 pounds and 10 shillings.

The earl himself holds LOPITONE [Loppington]. Edric Saluage held it. There 5 hides pay geld. In demesne there are 2 ploughs and 4 serfs and (there are) 15 villeins with 6 ploughs, and there might be 2 ploughs more. T.R.E. it was worth 3 pounds, now 6 pounds and 10 shillings.

The earl himself holds ELLESMELES [Ellesmere]. Earl Edwin held it. 4½ hides are there. In demesne there are 5 ploughs and 10 oxherds, and 36 villeins and 14 bordars with 2 priests have 14 ploughs. A mill there. T.R.E. (the manor) yielded 10 pounds of ferm, now 20 pounds. Of this manor Mundret holds 1 hide and Rainald 1 hide. They have there 2 ploughs and 4 serfs, and 4 villeins and 7 bordars with 3½ ploughs. It is worth 23 shillings.

The earl himself holds BEREWIC [Great Berwick]. Edric Saluage held (it). 1½ hides are there. In demesne there are 2 ploughs and 4 serfs and 1 bondwoman, and (there are) 11 villeins with 5 ploughs. T.R.E. it was worth 30 shillings, now 9 pounds.

The earl himself holds ARCHELOU [High Ercall]. Earl Edwin held (it) with 5 berewicks. 7 hides are there. In demesne are 6 ploughs and 12 oxherds. There 29 villeins and 12 bordars have 15 ploughs. There 2 mills pay 12 horse-loads of corn (*annonae*), and there is a fishery rendering 1,502 large eels. Of wood(land) there is one league. T.R.E. it was worth 20 pounds. Now the same. By custom whenever the countess visited the manor 18 ounces (*ore*) of pence were brought to her.

The earl himself holds WALITONE [Wellington]. Earl Edwin held it, with 5 berewicks. There 14 hides pay geld. In demesne there are 6 ploughs and 12 oxherds and 12 villeins, and 8 bordars with a priest have 9 ploughs, and other 9 ploughs might be (employed). A mill there of 12 shillings (value) and 2 fisheries of 8 shillings. T.R.E. it was worth 20 pounds, now 18 pounds.

Of the land of this manor William[29] holds of the earl 1 hide DALELIE [Dawley Magna] for a manor. Grim held it aforetime (*antea*). There is 1 plough, and 7 villeins have 1 plough. It was worth 30 shillings, now 10 shillings.

The earl himself holds EDMENDUNE [Edgmond]. Lewin Cilt held it with 6 berewicks. There 14 hides pay geld. In demesne there are 6 ploughs and 12 oxherds and one bondwoman. And 33 villeins and 8 bordars with 2 French-born (men) have 11 ploughs. There a mill with a fishery renders 10 shillings; and 11 ploughs more might be there (employed). T.R.E. it used to pay 14 pounds, now 15 pounds.

The earl himself holds TUANGE [Tong]. Earl Morcar held it. There 3 hides pay geld. In demesne there are 4 ploughs and 8 serfs, and (there are) 3 villeins and 2 bordars with 3 ploughs. 1 league (*leuua*) of wood(land) there. T.R.E. it was worth 11 pounds, now 6 pounds.

The earl himself holds DONITONE [Donington]. Earl Edwin held it. 3 hides are there. In demesne there are 4 ploughs and 8 oxherds and 2 bondwomen, and (there are) 12 villeins and 2 bordars with 3 ploughs, and 7 ploughs more could be there (employed). A mill there renders 5 horse-loads (*summas*) of corn (*annonae*), and there is wood(land) 1 league in length and half (a league) in breadth.

5 salt pits in WICH [? Droitwich] render 20 shillings. T.R.E. it rendered 20 pounds, now 9 pounds.

The earl himself holds DODINTONE [Ditton Priors]. Earl Edwin held it with 4 berewicks. There 12 hides pay geld. In demesne there are 5 ploughs and 10 serfs, and (there are) 20 villeins and 8 bordars with 6 ploughs, and other 13 ploughs could be there (employed). One salt pit in WICH [? Droitwich] renders 2 shillings. T.R.E. it rendered 10 pounds, now 11 pounds.

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The earl himself holds STRATUN [Church Stretton]. Earl Edwin held it with 4 berewicks. 8 hides are there. In demesne there are 3 ploughs and 6 serfs and 2 bondwomen, and (there are) 18 villeins and 8 bordars with a priest having 12 ploughs. There is a mill there, and a church, and in the wood(land) 5 hayes. And 6 ploughs more might be there (employed). T.R.E. it was worth 13 pounds, now 100 shillings.

[29] William Pantulf. Dawley Magna was formerly called Dawley Pantulf; Eyton, *Shrops.* viii, 42; ix, 54.

The same earl holds SIRETON [Siefton]. Edric held it. There are 5 hides. In demesne there are 3 ploughs and 2 bondwomen, and (there are) 3 villeins and 3 bordars with 1 plough, and 7 ploughs more might be there (employed). T.R.E. it was worth 6 pounds, now 100 shillings.

The same earl holds COMINTONE [Culmington]. Edric held it. There 5 hides pay geld, with 3 berewicks. In demesne there are 2 ploughs and 4 serfs, and (there are) 12 villeins with 3 ploughs, and 7 ploughs more might be there (employed). T.R.E. it was worth 4 pounds, now 6 pounds.

The same earl holds STODESDONE [Stottesdon]. Earl Edwin held it with 7 berewicks. There are 9 hides. In demesne there are 4 ploughs and 8 serfs and 3 bondwomen, and (there are) 18 villeins and 5 bordars and 6 coliberts with 11 ploughs. A mill of 10 shillings (value) is there, and 2 leagues (*leuuedes*) of wood(land). T.R.E. it was worth 20 pounds, now 10 pounds.

The church of St. Peter holds the church of this manor with 2½ hides. 10 villeins are there with 2 ploughs, and other 2 ploughs might be there (employed.) It is worth 20 shillings.

The same earl holds CATINTON [Chetton]. The Countess Godeva held it T.R.E. There 1 hide pays geld. In demesne there are 3 ploughs and 6 serfs and 2 bondwomen and 4 villeins, and 1 bordar with a priest and a reeve have 3 ploughs, and 2 ploughs more could be (employed). A new mill is there and 1 league (*leuua*) of wood(land). T.R.E. it was worth 100 shillings. Now 45 shillings.

The earl himself holds ARDINTONE [Eardington]. St. Milburg held it T.R.E. 5 hides are there. In demesne there is 1 plough and 4 serfs, and (there are) 9 villeins and 2 bordars with 3 ploughs, and 8 ploughs more might be (employed). A mill is there of 3 'ores' (value) and a new house and a 'burgh' called QUATFORD [Quatford], yielding nothing. T.R.E. it was worth 40 shillings. Now 30 shillings.

The earl himself holds BOLEBEC [ ].[30] Stenulf held it T.R.E. There ½ hide pays geld. There is land for 1 plough. It was and is waste. In OVRE [Overs[31]] ½ hide pays geld. Seward held it T.R.E. It is worth 3 shillings.

IN WITENTREV [ ] HUNDRED

The earl himself built a castle called MUNTGUMERI [Montgomery] to which adjoin 52½ hides which Sewar, Oslac, Azor held of King Edward quit of all geld. They had these (hides) for the chase (*ad venandum*). In ETENEHOP [Edenhope] 1 hide; in ESTUNE [Aston] 2 hides; in STANTUNE [ [32]] 7 hides; in CESTELOP [Castlewright ?] 2 hides; in MULITUNE [Mellington] 3 hides; in GOSEFORD [ ] 3 hides; in HOPTUNE [Hopton] 2 hides; in BENEHALE [ ] 7 hides; in DUDESTUNE [Dudston] 1 hide. WADELESTUN [Woodluston ?] 3 hides; in ELCHITUN [Hokleton] ½ hide; in WALECOTE [Walcot] 1 hide; in ULESTANES MUDE [Wolston Mynd] 3 hides. These lands the three before-mentioned thegns held. Now Earl Roger holds them. They are and were waste. Of the above 50 hides,[33] 3 hides are in his demesne. The same 3 thegns held WESTUNE [Great Weston] of 3 hides and STAURECOTE [ ] of 1 hide and HORSEFORDE [Horsebridge ?[34]] of ½ hide and TORNEBERIE [Thornbury] of 1 hide and HEME [Hem] of 3 hides and EDRITUNE [Edderton] of 1 hide and FURTUNE [Forden] of ½ hide and URBETUNE [Wropton] of 1 hide and ACHELAI [Ackley] of 1 hide.

These lands Roger Corbet holds of the earl. Except ACHELAI [Ackley] which Eilward holds. In these there are in demesne 9½ ploughs; and 15 villeins and 14 bordars with 3 radmans and 8 serfs have 12½ ploughs. They were waste. Now they are worth 100 shillings.

In HEME [Hem] are 3 fisheries and a wood with a haye. In EDRITUNE [Edderton] wood(land) for fattening (*incrassand'*) 60 swine. In ACHELAI [Ackley] there is 1 haye.

Earl Roger himself holds of the king the city of SCIROPESBERIE [Shrewsbury] and the whole county, and all the demesne which King Edward had there with 12 manors, which the king himself used to hold, with 57 berewicks thereto pertaining, and the same earl has 11 other manors in the same shire.[35]

Altogether (*inter totum*), that is to say, the city and the manors and the hundreds and the pleas of county (courts), they yield 300 pounds and 115 shillings of 'ferm.'

EARL HUGH holds of Earl Roger in Wales the land of GAL [Yale]. This land extends 5 leagues in length and 1½ leagues in breadth. T.R.E. it was waste and likewise when Hugh received it. In demesne there are 3 ploughs, and (there are) 2 priests and 33 men having between them 8 ploughs, and 1 plough more

[30] Perhaps The More in Eardington; Eyton, *Shrops.* i, 126.

[31] In Condover hundred, 1 mile SW. of Ratlinghope. As Seward still held it as under-tenant, it is entered again more correctly on fol. 259*b*.

[32] Possibly corresponds to Hyssington; cf. Eyton, *Shrops.* xi, 169.

[33] The actual sum, 50½ hides, is near enough to throw some doubt on the figure, 52½ hides, first given.

[34] Near Minsterley.

[35] See Introduction, pp. 288, 292, 305.

could be there (employed). A mill is there yielding nothing. The whole now is worth 40 shillings.

### In Odenet [Hodnet] Hundred

Raynald the sheriff holds of the earl Marcemeslei [Marchamley]. Seward and Alvric held it for 2 manors T.R.E. and were free. There 5½ hides pay geld. In demesne there are 2 ploughs and 4 serfs, and (there are) 6 villeins and 7 bordars and 2 radmans having 3 ploughs among them. A mill is there of 5 shillings (value); and 10 ploughs more could be (employed). There is wood(land) for fattening 100 swine, and a haye.

Of this land Walter holds 2½ hides and has there 1 plough. And 1 serf and 1 villein and 1 bordar (are there) with ½ plough. The whole (manor) T.R.E. was worth 100 shillings and afterwards was waste. Now it is worth 46 shillings and 4 pence.

The same Rainald holds of the earl Hetune [High Hatton] and Richard holds (it) of him. Ælric, Ulfac, Ulviet, and Leuric held it for 4 manors T.R.E. There 2 hides pay geld. In demesne there is 1 plough. And 4 serfs and 2 villeins and 2 'cottars' (are there) with 2 ploughs, and 5 ploughs more could be there (employed). They were free who held these lands. T.R.E. it was worth 60 shillings and afterwards it was waste. Now 10 shillings.

The same Rainald holds of the earl Stantune [Stanton upon Hine Heath] and Richard[36] (holds it) of him. Saward held it and was free with this land. There 1 hide pays geld. In demesne there is 1 plough and 4 serfs. (Also) a church and a priest and 6 bordars and a smith. Among them all they have 2 ploughs and there might be a third. There is a mill there of 10 shillings and 8 pence (value). T.R.E. it was worth 35 shillings and afterwards it was waste. Now it is worth 22 shillings.

The same Rainald holds Wicford [Great Wytheford] and Alcher holds (it) of him. Sten and Wilegrip held it and were free with that land. There 2½ hides pay geld. In demesne here are 2 ploughs and 8 serfs and (there are) 5 villeins and 1 radman and one French-born (man) with 3½ ploughs. A mill of 8 shillings (value) is there. T.R.E. it was worth 28 shillings and afterwards it was waste. Now 40 shillings.

The same Rainald holds in the same vill 1 hide and it pays geld, and Albert holds it of him. Uluric and Carlo held it for 1 manor. There there is 1 plough and 2 serfs and 2 bordars, and another plough could be established (*fieri*). It was worth 7 shillings, and afterwards was waste. Now 7 shillings.

### In Patintune (Patton] Hundred

The same Rainald holds of the earl Achetune [Acton Round]. There 4 hides pay geld. Ulviet held it and was free with this land. In demesne there are 2 ploughs and 7 serfs. And (there are) 9 villeins and 4 bordars with 4 ploughs, and 3 ploughs more could be (employed). A mill is there of 32 pence (value). T.R.E. it was worth 60 shillings. Now 40 shillings.

The same Rainald holds Abetune [Abdon] and Azo (holds it) of him. Ulwin held it and was free with this land. There 3 hides pay geld. There (are in demesne) 1 plough and 3 serfs, and (there are) one French-born (man) and 2 villeins and 1 radman and 2 bordars with 1 plough, and there might be 3 ploughs more. It was worth 20 shillings. Now 12 shillings.

The same Rainald gave to the church of St. Peter for the soul of Warin[37] his predecessor (*antecessor*) Dodefort [Tugford]. Elwin held it and was free with the land. 3½ hides are there. In demesne there are 3 ploughs and 3 serfs and 3 oxherds, and (there are) 3 villeins and 8 bordars with 5 ploughs. A mill is there of 4 shillings (value). It was worth 20 shillings. Now 40 shillings.

Of this land Rayner holds of Rainald 1 hide. There he has 1 plough and 1 oxherd, and (there are) 3 villeins and 1 bordar with one plough. It is worth 8 shillings.

The same Rainald holds of the earl Staneweie [Stanway] and Odo (holds) of him. Aluric held it and was a free man. There 2 hides pay geld. In demesne there are 2 ploughs and 4 serfs, and (there are) 3 villeins and 1 bordar with 2 ploughs, and 3 ploughs more could be (employed). T.R.E. it was worth 40 shillings. Now 30 shillings. It was waste when he received it.

The same Rainald with one Robert holds of the earl Grotintune [Gretton] and Odo (holds) of them. Alric and Otro held it for 2 manors. There 2 hides pay geld. These thegns were free. 5 villeins are there with two ploughs, and other 2 might be there (employed). T.R.E. it was worth 32 shillings. Now 10 shillings. When he received it it was waste.

The same Rainald holds of the earl Stope [Easthope] and Fulcher (holds) of him. Ernu and Uluric held it and were free. There 2 hides

fol. 254*b*.

pay geld. In demesne there is 1 plough and 4

[36] Probably Richard fitz Halufri, ancestor of the Stantons of this Stanton; Eyton, *Shrops.* ix, 293.

[37] For Warin the sheriff, see Introduction, p. 296.

serfs. And one ville n and 5 bordars with 1 plough, and 2 ploughs more might be there (employed). T.R.E. it was worth 15 shillings. Now 20 shillings. When he took it he found it waste.

The same Rainald holds Loteis [Lutwyche] and Richard (holds) of him. Godwin held it and was a free man. There 1 hide pays geld. In demesne there is one plough and 2 oxherds. And (there is) 1 villein and 1 bordar with ½ plough. It was and is worth 8 shillings.

The same Rainald holds Broctune [Brockton] and Richard (holds) of him. Semaer and Eliard and Eduin held it and were free with this land. There 2 hides pay geld. In demesne there is ½ plough and 2 serfs. And (there are) 3 villeins and 2 bordars and one French-born (man) with 1 plough among them all. And 4 ploughs more might be there (employed). T.R.E. it was worth 28 shillings. Now 15 shillings. When he received it he found it waste.

### In Conodovre [Condover] Hundred

The same Rainald holds Beritune [Berrington] and Azo (holds) of him. Thoret held of St. Andrew[38] by service ½ hide in this vill. Besides this ½ hide, he (Thoret) himself held 2 geldable hides. In demesne there are 2 ploughs and 7 serfs. And (there are) 6 villeins with 1 plough, and 2 ploughs more might be there (employed). Of this vill St. Peter in Shrewsbury holds the church and the priest. T.R.E. it was worth 30 shillings, and afterwards 14 shillings. Now 40 shillings.

The same Rainald holds Lege [ [39]] and Azo (holds) of him. Eldred held it and could go where he liked. There 2 hides pay geld. In demesne there is 1 plough and 1 serf. And (there are) 5 villeins with 2 ploughs, and 6 ploughs more might be there (employed). Roger Venator holds of Earl Roger the 'caput' of this manor, and the two hides which Azo holds exonerate his land, which is 'inland,' from geld. In Roger's demesne there are 2 ploughs and 3 serfs and 2 oxherds, and (there are) 9 bordars with 1 plough, and 3 ploughs more might be there (employed). Wood(land) is there for fattening 600 swine, and there there are 3 'fixed hayes' (*haiae firmae*) and a mill. T.R.E. it was worth 8 pounds and afterwards 20 shillings. Now 64 shillings.

The same Rainald holds Cuneet [Cound]. Earl Morcar held it. There 4½ hides pay geld. In demesne there are 2 ploughs and 6 serfs and 4 bondwomen. And 6 villeins and 6 bordars (are there) with 4 ploughs. There (there are) 2 mills of 20 shillings (value) and wood(land) for fattening 50 swine. T.R.E. it was worth 4 pounds and 7 shillings. Now 10 pounds.

The same Rainald holds Goldene [Golding] and Odo (holds) of him. Suen, a free man, held it. There ½ hide pays geld. In demesne there is 1 plough and 3 serfs and one bordar, and another plough might be there (employed). It was worth 8 shillings, now 5 shillings.

The same Rainald holds Æctune [Acton Pigot] and Odo (holds) of him. Gheri held it and could give and sell it. There 3 hides pay geld. In demesne there is 1 plough and 3 serfs, and (there are) 4 villeins with 1 plough. Wood(land) for fattening 20 swine. T.R.E. it was worth 20 shillings and afterwards 12 shillings. Now 13 shillings and 4 pence.

The same Rainald holds Chenelie [Kenley] and Odo (holds) of him. Edric held it and was a free man. There 1 hide pays geld. In demesne there is 1 plough, and other 4 ploughs might be there (employed). Wood(land) is there for fattening 400 swine. T.R.E. it was worth 30 shillings and afterwards it was waste. Now it is worth 4 shillings.

The same Rainald holds Etune [Eaton Mascott] and Fulcher (holds) of him. Toret held it and was a free man. There 3 hides pay geld. In demesne there is 1 plough and 4 serfs. And (there are) 3 villeins and 4 bordars with 1 plough, and other 2 ploughs might be there (employed). A mill is there of 4 shillings (value). T.R.E. it was worth 20 shillings and afterwards 24 shillings. Now 20 shillings.

### In Recordin [Wrockwardine] Hundred

The same Rainald holds of the Earl Etune [Eaton Constantine]. Wenesi held it T.R.E. 2 hides are there. In demesne there are 2 ploughs and 4 serfs and 2 bondwomen, and (there is) 1 villein and 5 bordars with 1 plough. And 2 ploughs more might be there (employed). There is a fishery in Severn (*Saverna*) yielding nothing, and a small (*modica*) wood rendering 5 pence. T.R.E. it was worth 50 shillings. Now 40 shillings. He found it waste.

The same Rainald holds Lestone [Leighton]. Lewi held it T.R.E. 3 hides are there. In demesne there are 3 ploughs and 6 oxherds. And 4 villeins and 7 bordars with a priest and 1 French-born (man) have 5 ploughs. There is a mill there of 4 shillings (annual value) and ½ league of wood(land) yielding 11 pence. T.R.E. it was worth 20 shillings. Now 40 shillings. He found it waste.

[38] Of Condover, though Berrington itself seems to have an Anglo-Saxon church.

[39] Eyton (*Shrops.* vi, 49) identifies this with Longnor; but it seems possible that the original name survives in Leebotwood.

The same Rainald holds of the earl ARCALUN [Child's Ercall]. Seward held it. 3 hides are there. In demesne there are 2 ploughs and 4 oxherds; and (there are) 7 villeins and 10 bordars and a priest and a smith and a French-born (man). Among them all they have 7½ ploughs, and one more might be there (employed). There is ½ league of wood(land) yielding 3 pence. T.R.E. it was worth 45 shillings. Now 60 shillings. He found it waste.

The same Rainald holds UPTUNE [Upton Magna]. Seward held it T.R.E. There 5 hides pay geld. In demesne there are 3 ploughs and 7 serfs, and (there are) 25 villeins and one French-born (man) with 12 ploughs, and 8 ploughs more might be there (employed). There is a mill of 16 shillings (value) and a fishery yielding what it may, and ½ league of wood(land). T.R.E. it was worth 10 pounds. Now 7 pounds.

The same Rainald holds BEREWIC [Berwick Maviston]. Ulviet held it T.R.E. Half a hide is there. In demesne there are 2 ploughs and 4 oxherds, and (there are) 4 villeins and 3 bordars with 2 ploughs. There is one league of wood (land) yielding 16 pence; and 1 plough more might be there (employed).

The same Rainald holds ROCHECESTRE [Wroxeter]. Toret held it and was a free man. There 1 hide pays geld. In demesne there are 1½ ploughs and 7 serfs and bondwomen together (*inter*). There (are) 7 villeins and 4 bordars and 4 priests and one radman. Among them all they have 4 ploughs. There is a church, and one league of wood(land). T.R.E. it was worth 40 shillings. Now the same.

The same Rainald holds HATLEGE [Hadley] and Gosfrid (holds) of him. Witric and Elric held (it) for 2 manors. 2 hides are there. In demesne there is 1 plough and 2 serfs and (there are) 8 bordars with ½ plough, and 2½ ploughs might be there (employed). There a mill of 2 shillings (annual value) and 1 league of wood(land). T.R.E. it was worth 37 shillings. Now 15 shillings. He found it waste.

The same Rainald holds DALELIE [Dawley Parva] and Benedict (holds) of him. Sistain held it. One hide is there. In demesne there is ½ plough and 1 serf. And (there is) 1 villein and 2 bordars with ½ plough. And 2 ploughs more might be there (employed). 1 league of wood(land). This the earl has in demesne. T.R.E. it was worth 24 shillings. Now 5 shillings.

The same Rainald holds of the earl 2 hides and 2 parts of a hide for a manor.[40] Wige held them T.R.E. Richard holds them of Rainald, and has 1 plough in demesne and 2 serfs, and there (are) 3 villeins with 2 ploughs. Of the same land a freeman (*francus homo*) holds ½ hide and 2 parts of one virgate, and has there, with his own 3 bordars, 6 ploughing oxen. T.R.E. it was worth 25 shillings. Now 20 shillings. 1½ ploughs (more) might be there employed.

The same Rainald holds LEGA [Lee Gomery] and Toret (holds) of him. He himself held it T.R.E. There are 3 hides. In demesne there is 1 plough, and 5 serfs and bondwomen together (*inter*), and (there are) 2 villeins and 4 radmans with 2 ploughs, and other 2 ploughs might be (employed). (There are) 2 leagues of wood (land). T.R.E. it was worth 20 shillings. Now 15 shillings.

The same Rainald holds RODINTONE [Rodington] and Toret (holds) of him. The same (man) held it T.R.E. There are 3 hides and 1 virgate. In demesne there is 1 plough and 2 serfs and 3 bondwomen; there is a church and a priest. And (there are) 2 villeins and 3 bordars and 3 radmans. Among them all they have 2½ ploughs, and 3 ploughs more might be (employed). There is a mill there of 6 pence (annual value). T.R.E. it was worth 27 shillings. Now 20 shillings.

### IN MERSETE [ ] HUNDRED

The same Rainald holds HALSTUNE [Halston]. Edric held it with 3 berewicks. There 7 hides pay geld. The land is (sufficient) for 8½ ploughs. Two Welshmen there and one French-born (man) with 2 men have 1½ ploughs. It is worth 4 shillings. It was waste, and he found it waste.

The same Rainald holds WESTONE [Weston Rhyn]. Seward held it. There 5 hides pay geld, with 5 berewicks. There is land (enough) for 15 ploughs. 2 Welshmen with 2 ploughs are there. Of this land Robert holds 1 hide, and has there 1 plough with 3 villeins. It was waste, and so he found it. Now it is worth 10 shillings.

The same Rainald holds MORTUNE [Morton] and [AITONE]. Seward held them for 2 manors. 5 hides are there. There is land (enough) for 8 ploughs. 5 men there have 2 ploughs. There is a small 'laund' (*landa*) of wood there. It was waste. Now it yields 64 pence.

The same Rainald holds MERESBROC [Maesbrook]. Levenot held it T.R.E. There are 2 hides. Land (enough) for 4 ploughs. There is 1 Welshman there with 1 plough, and he pays 5 shillings.

The same Rainald holds TIBETUNE [ ][41]. Ulviet held it T.R.E. There is 1 hide. There

[40] Name and situation unknown; perhaps absorbed in the Forest of Wombridge; Eyton, *Shrops.* vii, 350.

[41] 'Tibetone' occurs as a member of Oswestry in 1272; Eyton, *Shrops.* x, 361.

is land (enough) for 2 ploughs. Two Welshmen there have 1 plough and pay 4 shillings. These two manors were waste as many others (were).

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The same Rainald holds MELEURLEI [Melverley]. Edric held it T.R.E. There is 1 hide. Land (enough) for 2 ploughs. Two Welshmen there have 1 plough, and they pay 32 pence.

The same Rainald holds WESTUNE [Weston Cotton]. Seward held it T.R.E. There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there are 2 ploughs and 4 oxherds, and 4 Welshmen with 1 plough, and they pay 4 shillings. The whole is worth 10 shillings, and these (also) were waste.

The same Rainald holds of the earl UDETONE [Wootton] and Robert[42] (holds) of him. Edric held it with 2 berewicks. There are 2 hides. There is land (enough) for 4 ploughs. In demesne there is 1 plough and 2 oxherds, and (there are) 8 Welshmen with 1 plough. It is worth 15 shillings. There are 2 leagues of wood(land).

The same Rainald holds OSULVESTUNE [Woolston] and a certain knight (holds) of him. Uluric held it T.R.E. with one berewick. There are 1½ hides. There is land (enough) for 3 ploughs. 4 Welshmen have 1 plough. It is worth 6 shillings.

The same Rainald holds FELTONE [West Felton] and a certain knight (holds) of him. Seward held it. There there is ½ hide. There is land (enough) for 1 plough. It was and is waste.

The same Rainald has in Wales 2 commotes (*fines*), CHENLEI [Cynllaith] and DERNIOU [Edeyrnion].[42a] From the one he has 60 shillings by way of 'ferm' and from the other from the Welshmen 8 cows.

The same Rainald holds SBERNESTUNE [Osbaston] and CHIMERESTUN [Kynaston]. Seward and Alwi held them for 2 manors. There are 2 hides. There is land (enough) for 6 ploughs. 2 leagues of wood(land) are there. They were and are waste.

### IN CULVESTAN [ ] HUNDRED

The same Rainald holds CARDINTUNE [Cardington]. Austin and another Austin held it T.R.E. for 2 manors. There are 5 hides. In demesne there is 1 plough and 5 serfs, and (there are) 15 villeins and one radman with 7 ploughs among (them) all. And 8 ploughs more might be there (employed). There are 2 leagues of wood(land). T.R.E. it was worth 40 shillings. Now just as much.

The same Rainald holds ESTUNE [Aston]. Elmund held it T.R.E. There 8½ hides pay geld. In demesne there are 2 ploughs and 6 serfs. And (there are) 5 villeins and 8 bordars and a priest and 1 French-born (man) and 1 radman, with 5 ploughs among them all. And 9 ploughs more might be there (employed). A mill (is) there yielding (*de*) 3 measures (*mensuris*) of corn (annually). T.R.E. it was worth 65 shillings. Now 40 shillings. He found it waste.

### IN LENTEURDE [LEINTWARDINE] HUNDRED

The same Rainald holds CLONE [Clungunford[43]] and Fulco (holds) of him. Gunward held it T.R.E. There 2 hides pay geld. There are 5 villeins and 1 bordar with 2 ploughs, and 6 ploughs more might be there (employed). 3 'hayes' are there. The whole is worth 12 shillings.

The same Rainald holds STRAFORD [Strefford] and Azo (holds) of him. Elmund held it. There 2 hides pay geld. There is land (enough) for 4 ploughs. There are no men there and yet he has thence 20 shillings. T.R.E. it was worth 30 shillings and afterwards it was waste.

### IN OVRE [OVERS] HUNDRED

The same Rainald holds HANELEU [Henley] and Roger (holds) of him. Elmund held it and was free with this land. There 1 hide pays geld. In demesne there is ½ plough and 4 serfs and bondwomen together (*inter*). And 2 villeins and 1 bordar with 1 plough. A mill is there of 4 shillings (annual value). It was and is worth 12 shillings.

### IN BASECHERCHE [BASCHURCH] HUNDRED

The same Rainald holds FRANCHETONE [English Frankton] and Robert (holds) of him. Aldi held it T.R.E. There are 2 hides. In demesne there is 1 plough and 2 oxherds. And (there are) 3 villeins with 1 plough. T.R.E. it was worth 10 shillings. Now 15 shillings.

The same Rainald holds SALEURDINE [Shrawardine]. Æli held it T.R.E. There are 2 hides. In demesne are 2 ploughs and 4 oxherds, and (there are) 3 villeins and 4 bordars with 2½ ploughs. It was and is worth 40 shillings.

The same Rainald holds ABRETONE [Albright Hussey]. Seward held it. There (are) 2 hides (which) do not pay geld. There are 3 villeins and 1 radman and 1 French-born (man) with 4 bordars and they have 2½ ploughs. It is and was worth 15 shillings.

[42] Robert Pincerna ; see also p. 327 below.

[42a] See Introduction, p. 285.

[43] The latter part of the name is a corruption of Gunward.

The same Rainald holds NESSE [Little Ness]. Seward held it T.R.E. There are 3 hides. In demesne there are 2 ploughs, and (there are) 4 villeins and 3 bordars with 2 ploughs, and other 2 might also be (employed). There is a mill there yielding (*de*) 20 shillings and 600 eels. T.R.E. it was worth 3 pounds and afterwards 4 pounds. Now 10 shillings more.

The same Rainald holds MULLEHT [Middle]. Seward held it T.R.E. There are 8 hides. In demesne there is 1 plough, and (there are) 8 bordars and a priest, and 2 French-born (men). Wood(land) is there for fattening 40 swine. There is land (enough) for 20 ploughs. T.R.E. it was worth 6 pounds and afterwards 4 pounds. Now 70 shillings.

The same Rainald holds HANTONE [Welshampton]. Ældit held it T.R.E. There are 3 hides. Albert holds it of Rainald. In demesne there is 1 plough and 3 serfs, and (there are) 6 villeins and 4 bordars with 2 ploughs and other 2 ploughs might be there (employed). T.R.E. it was worth 15 shillings. Now 30 shillings.

The same Rainald holds AITONE[44] and Albert (holds) of him. Leuric held it T.R.E. There are 2 hides. In demesne there is 1 plough and 4 serfs and (there are) 2 villeins and 3 bordars with 1 plough. A mill is there of 10 shillings (annual value). It was worth 15 shillings. Now 25 shillings.

The same Rainald holds ROSELA [Rossall] and Albert (holds) of him. Hunni held it T.R.E. There is 1 hide. In demesne there is 1 plough and 4 serfs, and (there are) 2 villeins and 4 bordars with 1 plough, and there might yet be another. It was worth 20 shillings. Now 12 shillings.

The same Rainald holds ETBRETONE [Albright Hussey] and Herbert (holds) of him. Seward a free man held it. 2 hides there. In demesne there is 1 plough, and (there are) 8 villeins and 4 bordars with 2 ploughs. It was worth 14 shillings. Now 25 shillings.

The same Rainald holds HADEHELLE [Hadnall] and Osmund (holds) of him. Goduin held it. There 4 hides pay geld. In demesne there is 1 plough and 2 oxherds, and (there are) 6 villeins and 1 border and 2 French-born (men) with 3 ploughs. And still 4 oxteams might be (employed). Wood(land) there for fattening 40 swine. T.R.E. it was worth 60 shillings and afterwards 10 shillings. Now 20 shillings.

The same Rainald holds ACHETONE [Acton Reynold] and Richard (holds) of him. Seward held it T.R.E. and was a free man. There 3 hides pay geld. There is land (enough) for 5 ploughs. There 2 knights have 1 plough. Wood(land) there for fattening 30 swine. It was worth 4 pounds and now 10 shillings.

IN ELNOELSTRUIL [ ] HUNDRED

The same Rainald holds ESTONE [Aston Eyre] and Alcher[45] holds of him. Sessi held it T.R.E. and was a free man. There 2 hides pay geld. In demesne are 3 ploughs and 8 serfs. And (there are) 9 villeins and 2 bordars with 5 ploughs and a mill yielding nothing. It was worth 15 shillings. Now 30 shillings.

The same Rainald holds ELDONE [Eudon Burnell]. Ælward held it and was a free man. There 2 hides pay geld. In demesne are 3 ploughs and 6 serfs. And (there are) 1 villein and 5 bordars and 1 French-born (man) with 2 ploughs. Wood(land) for 60 swine. It was worth 30 shillings. Now 40 shillings.

The same Rainald holds in ETONE [Hatton] ½ hide. Turgot held it for one manor, and it pays geld.

The same Rainald holds ULTONE [Upton Cressett]. Elmund held it and was a free man. There 3 hides pay geld. In demesne are 2 ploughs and 3 serfs. And 1 free oxherd and 6 villeins and 4 bordars and 1 radman with 4 ploughs, and other 4 might also be (employed). Wood(land) there for fattening 30 swine. T.R.E. it was worth 40 shillings, afterwards 10 shillings. Now 25 shillings.

The same Rainald holds GLESLEI [Glazeley] and Azo (holds) of him. Elward held it and with his land was free. There 2 hides pay geld. In demesne there is 1 plough and 7 serfs. And (there are) 4 villeins and 5 bordars and 1 radman and a priest with 3 ploughs; and 2 ploughs more might be (employed). A mill is there of 5 shillings (value). It was worth 25 shillings. Now 20 shillings.

The same Rainald holds MIDDELTONE [Middleton Scriven] and Alcher and Albert (hold) of him. Edric a freeman held it for 2 manors. There 2 hides pay geld. In demesne there are 2 ploughs and 5 serfs. And (there are) 6 villeins and 5 bordars with 3 ploughs and other 3 more might be (employed). T.R.E. it was worth 13 shillings. Now 28 shillings. They were waste.

The same Rainald holds ESTONE [Aston Botterell] and Tochil (holds) of him. Elric held it and was free with this land. There 1 hide pays geld. In demesne there is 1 plough and 6 serfs. And 2 villeins and 3 bordars, and 3 radmans

[44] Eyton suggests the district known as 'The Isle'; *Shrops.* x, 87.

[45] Ancestor of the Fitz Aers.

with 2 ploughs among them all and a third plough might be there (employed). It was worth 14 shillings. Now 15 shillings.

The same Rainald holds FULOORDIE [Fulwardine] and Ralf (holds) of him. Elmund held it and was a free man. There ½ hide pays geld. In demesne there is 1 plough and 4 serfs. And 1 villein and 1 bordar with 1 plough, and 1 plough more might be there (employed). T.R.E. it was worth 16 shillings and afterwards 6 shillings. Now 10 shillings.

The same Rainald holds ALDEBERIE [Oldbury] and Ralf (holds) of him. Elward held it and was free. There 1 hide and 3 virgates pay geld. In demesne there is 1 plough and 7 serfs. And (there are) 3 French-born (men) and 2 cottars and 1 bordar with 2 ploughs, and other 2 might be (employed). A mill is there of 2 shillings (value), and wood(land) for fattening 100 swine. T.R.E. it was worth 30 shillings. Now 13 shillings. He found it waste.

IN CONDETRET [ ] HUNDRED

fol. 255*b*.

The same Rainald holds NORTONE [Norton] and Toret (holds) of him. He himself held it freely T.R.E. There 2 hides pay geld. In demesne there is 1 plough and 6 serfs, and (there are) 5 villeins with 2 ploughs, and other 2 might be there (employed). T.R.E. it was worth 20 shillings, now 15 shillings.

The same Rainald holds DODINTONE [Detton] and Robert (holds) of him. Elward and Elric held it for 2 manors and were free. There 2 hides pay geld. In demesne there are 2 ploughs and 7 serfs. And 1 villein and 4 bordars and 1 radman with 1 plough only. T.R.E. it was worth 24 shillings. Now 15 shillings. He found it waste.

IN BASECHERCHE [BASCHURCH] HUNDRED

ALCHER held of Warin, who was the predecessor of Rainald, ETBRITONE [Monks Albrighton].[46] Gheri held it and was a free man. There 3 hides pay geld. There is land (enough) for 6 ploughs. In demesne there are 2, and 4 serfs. And 1 French-born (man) and 6 villeins and 1 bordar with 3 ploughs. T.R.E. it was worth 20 shillings and afterwards 15 shillings. Now 30 shillings.

IN CONODOVRE [CONDOVER] HUNDRED

ROGER son of Corbet holds of Earl Roger HUELBEC [Welbatch] and Rannulf (holds) of him. Huninc held it and was free with this land. There 1 hide pays geld. In demesne there is 1 plough and 2 serfs and 2 bordars. A mill is there for winter, and not for summer, use (*hiemale non aestivum*). T.R.E. it (the manor) was worth 20 shillings. Now 5 shillings.

The same Roger holds and Rannulf (holds) of him 1 manor HUNDESLIT [Stapleton][47] of 1½ virgates, and it pays geld. Huning held it and was free. There is land (enough) for 1 plough. There is 1 villein. It was worth 16 shillings. Now 12 shillings.

The same Roger holds ACTUNE [Acton Burnell] and a certain Roger (holds) of him. Godric held it and was a free man. There 3½ hides pay geld. In demesne there is 1 plough and 2 serfs. And 1 villein and 4 bordars and 1 radman with 1½ ploughs. T.R.E. it was worth 30 shillings and afterwards 15 shillings. Now 20 shillings. One plough more might be there (employed).

IN RINLAU [ ] HUNDRED

The same Roger holds WANTENOURE [Wentnor]. Edric held it and was a free man. There 2½ hides pay geld. In demesne there are 3 ploughs and 15 serfs, and (there are) 5 villeins and 11 bordars with 8 ploughs ; 4 'hayes' are there. T.R.E. it was worth 6 pounds, afterwards 40 shillings. Now 4 pounds.

IN RUESSET [ ] HUNDRED

The same Roger holds WINESLEI [Winsley]. Seward a free man held it. There 2 hides pay geld. In demesne there are 2 ploughs and 1 villein and 1 radman with 1½ ploughs. It was and is worth 15 shillings.

The same Roger holds ½ hide [The Rea[48]] which Earl Morcar held in the same hundred. There is there 1 villein with ½ plough. It was and is worth 32 pence.

The same Roger holds WILLAVESTUNE [Wollaston]. Ulviet held it and was a free man. There ½ hide pays geld. It was and is waste and yet yields 12 pence.

The same Roger holds BELESLEI [Bausley[49]]. Siward held it. There (is) 1 hide not paying geld. Two Welshmen are there with 1 plough. It was and is worth 2 shillings, and nevertheless is at 'ferm' for 6 shillings and 8 pence.

[46] Alcher had already given it to Shrewsbury Abbey, but apparently the Domesday commissioners did not find the gift so substantiated as to warrant their registration of it ; Eyton, *Shrops.* x, 108.

[47] See Eyton, *Shrops.* vi, 108.

[48] Ibid. vii, 116.

[49] Occurs as 'Balislege' in 1308 ; Eyton, *Shrops.* vii, 99.

The same Roger holds ETUNE [Eyton]. Elmar held it. There are 1 hide and 3 virgates. Two bordars are there with 5 ploughing oxen. It is worth 3 shillings. There is land (enough) for 2 ploughs.

The same Roger holds LUCHETUNE [Loton]. Edric held it. There 1 hide pays geld. In demesne there is 1 plough and 1 serf, and 1 'haye.' It is worth 5 shillings, and still 2 ploughs more might be there (employed).

The same Roger holds IOCLEHUILE [Yockleton]. Edric held it and was a free man. There 6 hides pay geld. In demesne there are 3 ploughs and 8 serfs, and (there are) 19 villeins and 6 bordars with 8 ploughs. A mill there rendering 1 horseload of malt (*summam brasii*) and wood(land) for fattening 100 swine. T.R.E. it was worth 8 pounds. Now 6 pounds.

The same Roger holds PANTESBERIE [Pontesbury]. Ernui held it and still holds it of Roger. There $4\frac{1}{2}$ hides pay geld, and $1\frac{1}{2}$ hides do not pay geld. In demesne there are 4 ploughs and 7 serfs. And (there are) 10 villeins and 5 bordars and 1 radman with 5 ploughs, and 3 ploughs more might be there (employed). A mill there yielding a corn-rent (*annonam*) and wood(land) for fattening 40 swine. T.R.E. it was worth 8 pounds. Now 6 pounds.

The same Roger holds FERNELEGE [Fairley] and Ernuin holds of him. He himself held it T.R.E. and was free with the land. There 1 hide pays geld. In demesne there is 1 plough and 3 serfs, and 3 bordars, and 2 ploughs more might be there (employed). It was worth 4 shillings. Now 3 shillings.

The same Roger holds HANEWDE [Hanwood]. Edric held it and was a free man. There 2 hides pay geld. In demesne there is $\frac{1}{2}$ plough and 5 serfs, and (there are) 3 villeins and 2 bordars with $2\frac{1}{2}$ ploughs, and 1 plough more might be there (employed). It was worth 10 shillings and is worth it still.

The same Roger holds WESBERIE [Westbury]. Ernui held it and was free. There 2 hides pay geld. In demesne there is 1 plough and 1 serf and 2 priests and 5 villeins with 3 ploughs. It was worth 20 shillings. Now 25 shillings.

The same Roger holds WETESBURG [Wattlesborough]. Edric held it. There 2 hides pay geld. In demesne there are 3 ploughs and 3 oxherds, and (there are) 2 villeins and 1 bordar and 1 radman with 5 oxen; and 2 ploughs more might be (employed). T.R.E. it was waste. Now it is worth 20 shillings.

The same Roger holds MESSE [Marsh (The)]. Leniet and Dainz and Weniet held it for 3 manors and were free. There 3 virgates pay geld. In demesne there is 1 plough and 2 oxherds. It was worth 9 shillings. Now 5 shillings.

The same Roger holds CARTISTUNE [Cardeston] and Gislebert (holds) of him. Levenot held it and was a free man. There 1 hide pays geld. In demesne there is 1 plough and 4 serfs, and (there is) 1 villein and 1 bordar, and 3 ploughs more might be there (employed). T.R.E. it was worth 30 shillings. Now 20 shillings.

The same Roger holds WIBETUNE [Whitton]. Leuenot and Leimer and Ulchetel held it and were free. There $1\frac{1}{2}$ hides pay geld. In demesne there is 1 plough and 2 oxherds, and (there is) 1 villein and 5 bordars and 1 radman with 1 plough only, and other 2 ploughs might be there (employed). T.R.E. it was worth 9 shillings. Now 15 shillings.

IN WITENTREU [ ] HUNDRED

The same Roger holds WRDINE [Worthen]. Earl Morcar held it. There $14\frac{1}{2}$ hides pay geld, with 13 berewicks. In demesne there are 2 ploughs and 2 serfs, and (there are) 13 villeins and 6 bordars and 3 radmans with $10\frac{1}{2}$ ploughs. Two mills there yield 3 loads of corn (*summas frumenti*), and (there is) wood(land) 2 leagues long in which are 4 'hayes,' and it is sufficient for fattening 200 swine. Picot holds of Roger of the land of this manor 3 hides, and Reinfrid $3\frac{1}{2}$ hides, and Goisfrid $1\frac{1}{2}$ hides, and Grento $\frac{1}{2}$ hide. In demesne they have $4\frac{1}{2}$ ploughs and 4 serfs, and (there are) 7 villeins and 8 bordars with 4 ploughs and 3 oxherds. In this manor there is land (enough) for 41 ploughs. On Roger's demesne there might be 4 ploughs. The whole T.R.E. was worth 10 pounds and afterwards 10 shillings. Now what he holds 100 shillings. What the knights hold 4 pounds 10 shillings.

The same Roger holds RORITUNE [Rorrington] and Osulf (holds) of him. Elward held it and was a free man. 1 virgate is there, not geldable. In demesne there is $\frac{1}{2}$ plough, and (there are) 6 bordars with $\frac{1}{2}$ plough. Wood(land) there for fattening 15 swine, and half a 'haye.' It was worth 7 shillings and afterwards 16 pence, now 6 shillings.

The same Roger holds LESTUNE [Leighton]. Seward held it and was free. There is 1 hide, not geldable. In demesne there is 1 plough and 2 oxherds, and 1 radman. Wood(land) there 2 leagues long (which) is sufficient for fattening 200 swine. It was and is worth 5 shillings.

In Basecherche [Baschurch] Hundred

Roger[50] holds of the earl Maneford [Montford]. Elmer held it. There are 3 hides. In demesne there are 1½ ploughs, and (there are) 13 villeins with 6 ploughs, and 3½ ploughs more might be (employed). Half a fishery is there, and wood(land) for fattening 24 swine. T.R.E. it was worth 4 pounds, and afterwards 20 shillings. Now 4 pounds and 10 shillings. Bishop R[obt. Losinga of Hereford][51] claims this manor.

Roger holds of the earl Prestone [Preston Montford]. Godric held it and was a free man. There is 1 virgate of land. In demesne there is ½ plough. It was and is worth 3 shillings. There is wood(land) for fattening 10 swine.

In Recordine [Wrockwardine] Hundred

Roger holds of the earl Cerlitone [Charlton].[52] Uluric held it. There is 1 hide. 2 serjeants (*servientes*) have ½ plough there, and 1½ ploughs more might be (employed). It was waste. Now it yields 5 shillings.

fol. 256.

In Conodovre [Condover] Hundred

Rotbert son of Corbet holds of Earl Roger Ulestanestune [Woolstaston]. Chetel and Aluric held it for 2 manors. 2 hides are there; and these men were free. In demesne there is 1 plough, and (there are) 7 villeins with 1½ ploughs, and 3 ploughs more might be there (employed). Woodland there for fattening 12 swine. T.R.E. it was worth 40 shillings. Now 12 shillings.

The same Robert holds Rotelingehope [Ratlinghope]. Seward held it. 2 hides are there. They are and were waste.

The same Robert holds Umbruntune [Womerton]. Auti and Einulf and Aregrim and Archetel held it for 4 manors. There 2½ hides pay geld. These thegns were free. 2 villeins are there with ½ plough. The greater part of this manor is waste. T.R.E. it was worth in all 68 shillings. Now 10 shillings. There is land (enough) for 5 ploughs.

The same Robert holds Hach [Oaks]. Ernuit held it and was a free man. There 2 hides pay geld. In demesne there is ½ plough and 2 serfs, and (there is) 1 radman and 1 villein and 1 bordar with 1 plough, and 4 ploughs more might be (employed there). T.R.E. it was worth 40 shillings and afterwards 10 shillings. Now 8 shillings.

Robert holds of the earl Brantune [Brompton]. Seward held it. Half a hide is there. It was and is waste.

In Rinlau [ ] Hundred

Robert holds of the earl Cautune [Choulton]. Gunuert[53] held it and was a free man. There 2 hides pay geld. In demesne there are 2 ploughs and 1 serf and (there are) 7 villeins with 2 ploughs, and other 2 might still be (employed). It was and is worth 20 shillings.

In Ruesset [ ] Hundred

Robert holds of the earl Andreslaue [Onslow][54] and Ernui (holds) of him. He himself held it and was a free man. There 1 hide pays geld. In demesne there is 1 plough, and (there are) 3 villeins with 1 plough. It was worth 10 shillings, now 12 shillings.

The same Robert holds Udecote [Woodcote]. Uluric held it and was a free man. There 1½ hides pay geld. In demesne there is 1 plough, and (there is) 1 villein and 1 bordar with 1 plough, and 1 more might be (employed). And 1 burgess[55] renders 8 shillings. It was worth 8 shillings T.R.E. Now it is worth 15 shillings.

The same Robert holds Langedune [Longden]. Leuric held it and was a free man. There 3 hides pay geld. In demesne there are 2 ploughs and 4 serfs, and (there is) 1 villein and 9 bordars and 3 radmans and 6 cottars. Among them all they have 2 ploughs, and 3 ploughs more might be there (employed). (There is) wood(land) for fattening 60 swine. T.R.E. it was worth 4 pounds and afterwards 30 shillings. Now 40 shillings.

The same Robert holds Mersse [Marsh (The)]. Aluric held it and was a free man. There 2 hides pay geld. In demesne there are 2 ploughs and 6 serfs, and (there is) 1 bordar and 1 radman. There might be 4 ploughs (employed). T.R.E. it was worth 15 shillings. Now 12 shillings.

The same Robert holds Wigemore [Wigmore]. Aluric held it and was a free man. There 1 hide pays geld. 4 villeins are there with 1 plough, and still there might be another (plough). It was and is worth 5 shillings.

[50] The omission of 'isdem' in this and the next two entries suggests a doubt in the compiler's mind whether this Roger was Roger Corbet. No subsequent Corbet interest is probable. Roger de Lacy acted as lord of Montford within six years of Domesday, but possibly as grantee of 'Episcopus R.'; Eyton, *Shrops.* x, 125.

[51] See Introduction, p. 291.

[52] Either (1) part of Charlton near Shawbury, or (2) Charlton near Preston Gubbals, or (3) part of Cherrington; Eyton, *Shrops.* viii, 253.

[53] Probably the Gunward whose name is preserved in Clungunford.

[54] Formerly 'Ondeslawe'; Eyton, *Shrops.* vii, 172.

[55] Probably in Shrewsbury. See Introduction, p. 294.

In Witentrei [ ] Hundred

The same Robert holds Roritune [Rorrington]. Aluric held it. There (is) 1 virgate, not geldable. In demesne there is 1 plough and 7 serfs, and 2 bordars. Wood(land) there for fattening 15 swine, and half a 'haye.' It was worth 3 shillings, now 6 shillings. Leuric holds it of Robert.

The same Robert holds Mildetune [Middleton]. Edric Saluage held it. There 3 virgates pay geld. 1 radman is there and 1 villein and 2 bordars with ½ plough, and 1 plough more might be (employed). It was worth 4 shillings. Now 5 shillings.

The same Robert holds Westune [Priest Weston]. 6 thegns held it for 6 manors and were free. Each had 1 virgate of land and paid geld. Now there are 7 radmans with 3 ploughs, and they pay 20 shillings. The land of 2 thegns was worth 10 shillings, but (the land) of the others was waste.

The same Robert holds Meritune [Marrington]. Elward and Aluric held it for 2 manors, and were free men. There ½ hide pays geld. 2 radmans are there and 3 bordars with 2 ploughs, and there is wood(land) for fattening 15 swine. It was worth 7 shillings and afterwards 5 shillings. Now 4 pence more.

In Basecherche [Baschurch] Hundred

Rotbert Pincerna holds of Earl Roger Waleford [Walford] and Sturmid (holds) of him. Seward held it T.R.E. 2 hides are there. In demesne there is ½ plough and 1 oxherd, and (there are) 2 villeins and 2 bordars with 1½ ploughs. T.R.E. it was worth 15 shillings, and afterwards it was waste. Now it is worth 20 shillings.

The same Robert holds Staurdine [Stanwardine-in-the-Field]. Eldred held it. 2 hides are there. 1 villein is there and 1 bordar and a smith, with ½ plough, and there might be 2 ploughs more there. It was and is worth 10 shillings.

The same Robert holds Pectone [Petton] and Ralf (holds) of him. Levenot held it. There are 1½ hides. In demesne there is 1 plough, and (there are) 2 villeins and 2 bordars with 1 plough. It was worth 5 shillings. Now 10 shillings.

The same Robert holds Hetone [Eyton[56]] and another Robert (holds) of him. Lewi held it. 1 hide is there. 1 villein and 3 bordars are there with 1½ ploughs. It was waste. Now it is worth 5 shillings.

[56] Near Baschurch.

The same Robert holds Crugetone [ [57]] Earl Edwin held it. There are 1½ hides. In demesne there is 1 plough and 2 serfs and 1 bondwoman (*ancilla*), and (there are) 9 villeins and 2 bordars and 1 free man with 3 ploughs. 4 fisheries there of 13 shillings and 4 pence (value). T.R.E. it yielded at 'ferm' 73 shillings and 4 pence. Now 4 pounds and a thousand eels.

The same Robert holds Estone [Aston[58]] Uluric held it. 2 hides are there. There is land (enough) for 4 ploughs. There 12 Welshmen have 2 ploughs. It was worth 3 shillings. Now 10 shillings.

In Recordin [Wrockwardine] Hundred

Roger de Curcelle holds of Earl Roger Sudtone [Sutton near Drayton]. The Countess Godeva held it. There 4 hides pay geld. In demesne there is 1 plough and 2 oxherds, and 9 bordars with 1 radman have 2 ploughs, and still 4 ploughs more might be there (employed). A mill is there yielding 8 loads of corn (*summas annone*). It was and is worth 25 shillings.

The same Roger holds Tetbristone [Tibberton]. Ulgar held it. There 5 hides pay geld. In demesne there is 1 plough and 2 oxherds, and (there are) 4 bordars with 1 plough, and 7 ploughs more might be (employed). T.R.E. it was worth 60 shillings and afterwards it was waste. Now it is worth 10 shillings.

In Odenet [Hodnet] Hundred

The same Roger holds of the earl Edeslai [Edgeley]. Aluric held it and was a free man. There 1 hide pays geld. 1 radman is there, and 1 villein and 5 bordars with 1 plough, and 5 ploughs more might be there (employed). 1 serf is there. T.R.E. it was worth 40 shillings, now 12 shillings. He found it waste.

The same Roger holds Dodetune [Dodington[59]]. Earl Edwin held it. There 1 hide pays geld. 4 villeins are there and 1 radman with 2 ploughs, and other 2 might be (employed). Wood(land) there for fattening 60 swine. It was worth 16 shillings. Now 9 shillings.

The same Roger holds Stile [Steele]. Algar, Collinc, Brictric, and Turgar held it and were free men. 1 hide is there. (It was held) as (*pro*) 4 manors. There are 4 villeins and 1 bordar with 1 plough, and 2 ploughs more might be (employed). Wood(land) there for fattening 30 swine. T.R.E. it was worth 13 shillings. Now 6 shillings.

[57] See Eyton, *Shrops.* x, 308.

[58] Probably Aston near Oswestry, misplaced here under Baschurch hundred.

[59] Now the southern portion of the town of Whitchurch.

### In Odenet [Hodnet] Hundred

Roger de Laci holds Mortune [Moreton Say] of Earl Roger and William (holds) of him. Elmund held it and was a free man. There 3 hides pay geld. In demesne there is 1 plough and 8 serfs, and (there are) 4 villeins and 4 bordars with 2 ploughs, and 6 ploughs more might be there (employed). Wood(land) for fattening 100 swine. T.R.E. it was worth 40 shillings and afterwards it was waste. Now it is worth 30 shillings.

The same Roger holds Lai [Lowe, The[60]] and William (holds) of him. There 1 hide pays geld. Elwi held it and was a free man. One free man there has ½ plough, and 1 plough more might be there (employed). It was worth 6 shillings, now 2 shillings. It was waste.

fol. 256*b*.

In this hundred Edric held one 'berewick' Hotune [Hopton] of ½ hide and it paid geld, and this land could not be separated from the manor of Stoches [Stoke upon Tern] which Roger de Laci holds. This land is assessed in that manor in Recordin [Wrockwardine] Hundred.

### In Patintun [Patton] Hundred

The same Roger holds of the earl Patintune [Patton]. Alwin held it and was a free man. There 1 hide pays geld. Herbert holds it of Roger. In demesne he has 1 plough and 2 serfs. And 1 villein and 1 radman (are there) with 1 plough, and 3 ploughs more might be (employed). A priest is there, and 1 bordar. T.R.E. it was worth 10 shillings and afterwards was waste. Now 24 shillings.

The same Roger holds Riseberie [Rushbury] and Odo (holds) of him. Ælwin held it and was a free man. There 5 hides pay geld. In demesne there are 2 ploughs and 4 serfs. And (there are) 1 villein and 3 radmans and 2 bordars with 5 ploughs. A mill (is) there, and wood(land) for fattening 40 swine, and a falcon's eyrie. T.R.E. it was worth 60 shillings and afterwards it was waste. Now 35 shillings; and 2 ploughs more might be there (employed).

The same Roger holds Stantune [Long Stanton] and Herbert (holds) of him. Elwin held it and was a free man. There 3 hides pay geld. In demesne there are 1½ ploughs and 2 serfs. And 1 bordar with ½ plough. It was worth 6 shillings. Now 12 shillings.

### In Recordin [Wrockwardine] Hundred

The same Roger holds Stoche [Stoke upon Tern]. Edmund held it. 7 hides are there. In demesne there are 3 ploughs and 6 serfs and 3 bondwomen. A church and priest and 11 villeins and 3 radmans and one French-born (man) with 10 ploughs among them all. And still 5 ploughs more might be (employed). A mill (also) is there of 12 shillings (value), and a third part of a league of wood(land). T.R.E. it was worth 6 pounds and afterwards was waste. Now it is worth 7 pounds.

The same Roger holds Wideford [Little Wytheford] and Robert (holds) of him. Levenod held it. There is ½ hide and ½ plough, and another ½ plough might be there (employed). It was worth 2 shillings. Now it is assessed in the 'ferm' of Stoche [Stoke upon Tern].

The same Roger holds Uptone [Waters Upton] and Seward (holds) of him. Gamel held it. 3 hides are there. In demesne there are 2 ploughs and 4 oxherds, and (there are) 4 villeins and 1 bordar and 1 radman with 2 ploughs, and other 2 might be there (employed). A mill there of 12 shillings and 1 penny. T.R.E. it was worth 40 shillings and 4 pence and afterwards it was waste. Now it is worth 30 shillings and 2 pence and 1 farthing.

### In Culvestan [ ] Hundred

The same Roger holds Cortune [Corfton] and Herbert (holds) of him. Alsi held it. There 3 hides pay geld. In demesne there are 2 ploughs and 4 oxherds and (there are) 4 villeins and 1 bordar with 2 ploughs, and other 2 might be (there employed). A haye is there for catching roe-deer (*capreolis*). It was worth 16 shillings. Now 12 shillings.

The same Roger holds Mildehope [Middlehope] and Herbert (holds) of him. Ælsi held it. There 1 hide pays geld. In demesne there are 2 ploughs and 4 serfs, and (there are) 2 villeins and 4 bordars and 1 radman with 2 ploughs. T.R.E. it was worth 7 shillings and afterwards 2 shillings. Now 20 shillings.

### In Lenteurde [Leintwardine] Hundred

The same Roger holds Plesham [Plaish] and Berner[61] (holds) of him. Goduin held it. There 1 hide pays geld. In demesne there is 1 plough, and (there is) 1 villein and 1 serf with ½ plough. It was worth 3 shillings. Now 5 shillings.

### In Ovre [Overs] Hundred

The same Roger holds Buterlie [Bitterley]. Goduin held it and was a free man. There 3 hides pay geld. In demesne there is 1 plough and 4 serfs and bondwomen inclusive (*inter servos*

[60] About 14 miles N. of Shrewsbury. Eyton (*Shrops.* ix, 269) suggested Audley Brow.

[61] Lacy's tenant and Godwin's successor at Higford also, 20 miles away; see below.

*et ancillas*). A church and a priest and 6 villeins and 1 bordar with 3 ploughs, and other 3 might be there (employed). There also 2 'hayes.' T.R.E. it was worth 60 shillings and afterwards was waste. Now 40 shillings.

In Basecherche [Baschurch] Hundred

The same Roger holds Fordune [Forton] and Osbern (holds) of him. Edmer held it. 3 hides are there. In demesne there is 1 plough and 2 oxherds, and (there are) 1 villein and 13 bordars with 2½ ploughs, and other 2 might there be (employed). Wood(land) there for fattening 100 swine. T.R.E. it was worth 20 shillings and afterwards just the same. Now 25 shillings.

The same Roger holds Huchefor [Higford]. Godwin held it and was a free man. There 3 hides pay geld. Berner holds it of Roger. In demesne he has 3 ploughs and 9 serfs and 7 villeins and 7 bordars and 2 radmans with 5 ploughs. A mill there of 8 shillings (value). Wood(land) for fattening 100 swine. It was worth 40 shillings. Now 60 shillings.

In Condetret [ ] Hundred

The same Roger holds of the earl Waltham [Wheathill [62]]. Elmund held it. 3 hides are there. In demesne there are 2 ploughs and 10 serfs. And 4 villeins with a reeve have 2 ploughs. T.R.E. it was worth 40 shillings. Now it is worth 40 shillings and pays one falcon.

In Basecherch [Baschurch] Hundred

Rotbert Fitz Tetbald holds of Earl Roger Iteshale [Idshall or Shifnal]. Earl Morcar held it. There 7½ hides pay geld. In demesne there are 9 ploughs and 26 serfs. And 37 villeins and 3 bordars and 3 radmans with 27 ploughs. Wood(land) there for fattening 300 swine. T.R.E. it was worth 15 pounds and afterwards 6 shillings. Now it yields 15 pounds.

The same Robert holds Chenbritone [Kemberton]. Aluric, Elmer, and Ulwin, and Edmer held it for 4 manors, and were free. There 3 hides pay geld. In demesne there are 2 ploughs and 4 serfs, and (there are) 3 villeins and 3 bordars and 1 radman with 1½ ploughs among them all, and 8 ploughs more might be there (employed). Wood(land) there for fattening 30 swine. T.R.E. it was worth 28 shillings, now 15 shillings.

In Recordin [Wrockwardine] Hundred

The same Robert holds Udecote [Woodcote] and Tochi (holds) of him. Aluric held it. 3 hides are there. In demesne there is 1 plough and 2 oxherds. And (there are) 1 villein and 3 bordars and 3 freemen with 2 ploughs among them all, and 3 ploughs more might be (employed). It was worth 20 shillings. Now 10 shillings.

The same Robert holds one manor (? the Eye Farm [63]) of 1 virgate of land in the same hundred, and Tochi (holds) of him. There is land for 1 plough. There are 1 villein and 2 serfs, and they have nothing. It was worth 5 shillings.

In Conedovre [Condover] Hundred

Rannulf Pevrel holds of Earl Roger Cristesache [Cressage]. Edric held it and was a free man. There 1½ hides pay geld. In demesne are 3 ploughs and 8 serfs, and 7 villeins and 11 bordars and 4 cottars have 4 ploughs, and 2 more might be (employed). A fishery is there of 8 shillings (value), and wood(land) for fattening 200 swine. T.R.E. it was worth 110 shillings. Now 10 pounds. When he got it it was worth 6 pounds.

In Odenet [Hodnet] Hundred

The same Rannulf holds Lach [Lacon]. Elnod held it and was a free man. There 2½ virgates of land pay geld. In demesne there is ½ plough with 1 bordar, and ½ plough more might be (employed). It was worth 5 shillings. Now 3 shillings.

The same Rannulf holds Westune [Weston-under-Redcastle]. Edric Saluage held it. There 3 hides pay geld. In demesne there are 2 ploughs and 8 serfs. And (there are) 3 villeins and 1 radman and 9 bordars with 1 plough, and 5 ploughs more might be there (employed). T.R.E. it was worth 60 shillings and afterwards 5 shillings. Now 40 shillings.

The same Rannulf holds Witehala [Whixall]. Ældid held it and was a free man. There 1 hide pays geld. In demesne there is 1 plough and 2 oxherds, and (there are) 2 bordars, and 1 plough more might be there (employed). T.R.E. it was worth 8 shillings. Now 5 shillings.

In Conodovre [Condover] Hundred

Ralf de Mortemer holds of Earl Roger Schentune [Sheinton] and Helgod (holds) of him. Azor, Ælgar, and Saulf held it for 3 manors and were free men with the lands. There 2 hides pay geld. In demesne there are 1½ ploughs and 2 serfs. And 1 French-born (man) with 9 bordars have 2 ploughs, and a third might be (employed). A mill there of 10 shillings (value), and wood(land) for fattening 100 swine. It was worth 17 shillings. Now 20 shillings.

[62] See Eyton, *Shrops.* iv, 283.

[63] South of Eaton Constantine; Eyton, *Shrops.* ix, 17.

IN CULVESTAN [ ] HUNDRED

The same Ralf holds HANTENETUNE [Huntington [64]] and Turstin (holds) of him. Ludi held it. There 1½ hides pay geld. In demesne there are 2 ploughs and 4 oxherds, and (there are) 2 villeins and 2 bordars and 1 radman with 1 plough, and another plough might be (employed). A mill there rendering (*de*) 400 eels. It was worth 10 shillings and afterwards 5 shillings. Now 10 shillings.

The same Ralf holds there one manor [Upper Ashford] and Richard (holds) of him. Azor held it. There 1½ hides pay geld. In demesne there are 1½ ploughs and 4 serfs. And (there are) 2 villeins and 2 bordars with 1 plough. It was worth 5 shillings. Now 10 shillings.

IN OVRE [OVERS] HUNDRED

The same Ralf holds CAIHAM [Caynham]. Earl Morcar held it. 8 hides are there. In demesne there are 4 hides, and 2 ploughs and 2 serfs are there, and (there are) 10 villeins and 5 bordars with 4 ploughs. A mill there and 4 loads of salt from Wich [Droitwich]. Wood(land) for fattening 200 swine, and there are 3 hayes there. In the whole manor there is land (enough) for 19 ploughs. Of the land of this manor Robert Veci holds 3 hides and Walter 1 hide of Ralf. In demesne they have 2 ploughs and 7 serfs. And (there are) 4 villeins and 4 bordars with 1 plough only. The whole manor T.R.E. was worth 8 pounds and afterwards 60 shillings. Now that which Ralf holds (is worth) 40 shillings. That which the knights hold 38 shillings.

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IN BASECHERCH [BASCHURCH] HUNDRED

The same Ralf holds ELDONE [Eudon George]. Edric held it and was a free man. There 2 hides pay geld. In demesne there are 2 ploughs and 6 serfs. And (there are) 1 villein and 2 bordars with 1 plough, and 2 ploughs more might be there (employed). T.R.E. it was worth 25 shillings and afterwards was waste. Now it is worth 15 shillings.

The same Ralf holds CELMERES [Chelmarsh]. Earl Edwin held it. There 5 hides pay geld. In demesne there are 3 ploughs and 6 serfs, and (there are) 13 villeins and 8 bordars with 6 ploughs. T.R.E. it was worth 6 pounds and afterwards was waste. Now 40 shillings.

The same Ralf holds SUDBERIE [Sidbury]. Wiga held it and was a free man. There 1 hide pays geld. In demesne there are 2 ploughs and 6 serfs, and (there are) 6 villeins and 3 bordars with 2 ploughs, and other 2 more might be (employed). T.R.E. it was worth 20 shillings and afterwards it was waste. Now 18 shillings.

The same Ralf holds NEWENTONE [Neenton] and Roger holds of him. Azor held it and was a free man. Half a hide is there. In demesne there are 2 ploughs and 2 serfs, and (there are) 2 villeins and 2 bordars with 1 plough, and 2 ploughs more might be there (employed). T.R.E. and now worth 17 shillings.

The same Ralf holds BURERTONE [Burwarton] and Helgot (holds) of him. Azor held it. Half a hide is there. There is land (enough) for 3 ploughs. 2 villeins there have 1 plough. It was waste, now it is worth 2 shillings.

Ralf holds COSTEFORD [Cosford]. Turgot held it and was a free man. There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there is 1. T.R.E. it was worth 40 shillings, and afterwards was waste. Now 5 shillings.

IN CONDETRET [ ] HUNDRED

The same Ralf holds HUGELEI [Highley]. The Countess Godeva held it. The 3 hides pay geld. In demesne there are 1½ ploughs. And 6 villeins and 6 bordars and 1 radman have 2½ ploughs, and 2 ploughs more might be there (employed). Woodland there for fattening 36 swine. T.R.E. it was worth 15 shillings and afterwards 3 shillings, now 18 shillings.

The same Ralf holds WALTONE [Walton Savage] and Ingelrann (holds) of him. Edric held it and was a free man. There ½ hide pays geld. In demesne there is 1 plough and 4 serfs and 6 bordars. It was worth 10 shillings. Now 8 shillings. He found it waste.

The same Ralf holds BARBINGI [Baveney] and Fech (holds) of him. Alsi and Fech held it for 2 manors. Half a hide is there. One virgate of these 2 [65] lay in Claiberie [Cleobury]. Now 2 radmans and 2 bordars have 1 plough there. It was worth 10 shillings. Now 6 shillings.

The same Ralf holds WALLE [Walltown] and Richard (holds) of him. Uluric held it. One hide is there. There is land (enough) for 2 ploughs. One (plough) is there with 2 oxherds. It was worth 6 shillings. Now 8 shillings.

The same Ralf holds CATESCHESLEIE [Catsley] and Ulf (holds) of him. Edric held it. Half a hide is there. In demesne there is 1 plough and 2 oxherds, and (there is) 1 villein and 2 bordars with 1 plough. It was worth 6 shillings and 6 pence. Now 8 shillings.

[64] In Ashford Carbonell ; Turstin is perhaps Turstin de Wigmore ; see Introduction, p. 289.

[65] A neat proof of the equation 4 virgates = 1 hide.

The same Ralf holds OVRETONE [Overton] and Ingelrann (holds) of him. Edric held it. 2 hides are there. In demesne there is 1 plough and 2 oxherds, and (there are) 3 villeins and 2 bordars with 1 plough. It was and is worth 20 shillings.

IN RECORDIN [WROCKWARDINE] HUNDRED

Ralf holds of R[oger] PRESTUNE [Preston on Weald Moors]. Burrer held it. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there is 1, and 2 oxherds, and (there are) 3 villeins with one plough. Half a league of woodland there. It was worth 40 shillings, now 20 shillings.

Ralf holds of Earl R[oger] ASNEBRUGE [Isombridge].[66] Ulf held it. There 2 hides pay geld. There is land for 4 ploughs. In demesne there is 1, and 2 oxherds, and (there are) 4 villeins and 3 bordars with 2 ploughs. A mill is there rendering 3 loads of corn. One knight there has ½ hide of this land. It was and is worth 20 shillings.

Ralf holds of Earl R[oger] PAPELAU [Peplow]. Orgrim and Uluric held it for 2 manors. There 3 hides pay geld. There is land (enough) for 7 ploughs. In demesne there is 1 plough and 2 serfs, and (there are) 5 villeins with 3 ploughs. T.R.E. it was worth 46 shillings. Now 12 shillings and 4 pence. He found it waste.

RICHARD holds of the earl in BROCHETONE[67] [Brockton] ½ hide. There is land (enough) for 1 plough. Aisil held it as (*pro*) one manor. There is 1 free man there. It pays 16 pence.

IN ODENET [HODNET] HUNDRED

WILLIAM de Warene holds of Earl Roger WESTUNE [Whitchurch].[68] Earl Harold held it. There 7½ hides pay geld. In demesne are 4 ploughs and 2 serfs, and 6 oxherds. And (there are) 23 villeins and 9 bordars and 1 radman with 8 ploughs, and 14 ploughs more might be there (employed). Woodland there for fattening 400 swine, and 3 'hayes' (also) there. T.R.E. it was worth 8 pounds, now 10 pounds.

IN ODENET [HODNET] HUNDRED

WILLIAM Pantulf holds of Earl Roger ULWARDELEGE [Wolverley]. Wigha and Elmer held it for 2 manors and were free men. There 3 hides pay geld. Land (enough) for 4 ploughs, 3 villeins are there with 1 plough and 1 radman. T.R.E. it was worth 17 shillings. Now 8 shillings. He found it waste.

The same William holds WICFORD [Great Wythiford]. Carle held it. There ½ hide pays geld. There is land (enough) for 2 ploughs. 1 villein and 1 bordar have there 1 plough. T.R.E. it was worth 10 shillings, and afterwards 8 shillings. Now 10 shillings.

The same William holds HORTUNE [Horton[69]]. Elveva held it and was a free woman. There 3 hides pay geld. There is land (enough) for 4 ploughs. In demesne there is ½ plough and 2 serfs. And (there are) 3 bordars with ½ plough. Woodland there for fattening 60 swine. It was and is worth 10 shillings.

The same William holds WEME [Wem]. Wighe and Lewin and Alveva and Ælveva held it for 4 manors and were free. There 4 hides pay geld. There is land (enough) for 8 ploughs. In demesne there is 1 plough and 2 serfs, and (there are) 4 villeins and 8 bordars with 1 plough. A falcon's eyrie there, and woodland for fattening 100 swine, and one 'haye.' T.R.E. it was worth 27 shillings, now 40 shillings. He found it waste.

The same William holds TIRELIRE [Tirley[70]]. Uluric and Ravesuard held it for 2 manors and were free. There 1 hide pays geld. There is land (enough) for 2 ploughs. 4 villeins and 1 serf with 1 plough are there. It was worth 17 shillings. Now 20 shillings.

The same William holds STANESTUNE [Edstaston]. Ordui and Alveva held it and were free. There 2 hides pay geld. There is land (enough) for 2 ploughs. 3 villeins have 1 plough there. Wood(land) there for fattening 60 swine. T.R.E. it was worth 7 shillings. Now 20 shillings. He found it waste.

The same William holds COTE [Cotton[71]] Wighe and Grimchetel held it and were free men. There are 2 hides, for 2 manors, and they pay geld. There is land (enough) for 3 ploughs. 2 radmans with 1 villein there have 1 plough. T.R.E. it was worth 20 shillings. Now 12 shillings. Woodland there for fattening 60 swine, and one 'haye.'

The same William holds ALCHETUNE [Alkington]. Elmer held it and was a free man. There 1 hide and 1 virgate pay geld. Land (enough) for 5 ploughs. In demesne there is ½ plough and 1 serf, and (there are) 2 villeins and one bordar with ½ plough. Woodland there for fattening 100 swine. T.R.E. it was worth 4 pounds

[66] Occurs as 'Esnebrugge' in 1278; Eyton, *Shrops.* viii, 263.

[67] Entered again below, p. 343.

[68] Being William de Warenne's only holding in the county, the identification is clear in spite of the difference of names.

[69] A township of Wem.

[70] Now in Staffordshire; see Introduction, p. 286.

[71] Near Wem.

and 3 shillings and afterwards a like sum. Now 10 shillings only.

The same William holds one 'berewick' Draitune [ [72]]. Goduin held it and was a free man. There 2 hides pay geld. There is land (enough) for 8 ploughs. In demesne there is 1, and 2 oxherds, and (there is) a priest, and 2 bordars with 1 plough. It was worth 20 shillings. Now 10 shillings.

The same William holds Harpecote [Harcourt]. Turtin held it and was a free man. There ½ hide pays geld. There is land (enough) for 1½ ploughs. 1 radman there has ½ plough. It was worth 8 shillings, now 2 shillings.

The same William holds Estune [Aston [73]] and Walter (holds) of him. Ulviet and Elmer held it for 2 manors and were free. There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there is 1 plough and 1 serf and 1 oxherd, and (there are) 2 bordars. Woodland (also) for fattening 40 swine. It was worth 20 shillings. Now 10 shillings.

### In Conodovre [Condover] Hundred

The same William holds Begestan [Bayston]. Edric held it of the bishop of Hereford and could not alienate (*divertere*) it from him, because it was of his table (*de victu suo*), and he had assigned (*prestiterat*) it to him only for his lifetime.[74] There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there is 1, and 4 serfs, and (there are) 2 bordars. It was worth 10 shillings. Now 25 shillings.

The same William holds Nortune [Norton]. Uluric held it and was a free man. There 1 hide pays geld. There is land (enough) for 2 ploughs. 3 villeins there with 1 bordar have 1 plough. T.R.E. it was worth 30 shillings and afterwards 9 shillings. Now 25 shillings.

### In Recordin [Wrockwardine] Hundred

The same William holds Stoche [Hinstock [75]] and Sasfrid (holds) of him. Algar held it. There 2½ hides pay geld. There is land (enough) for 5 ploughs. In demesne there is 1 and 2 oxherds, and (there is) 1 bordar. One league of woodland (also). It was worth 40 shillings. Now 8 shillings.

The same William holds Corselle [? Cross Hill [76]] and Safsrid (holds) of him. Goduin held it. There 2 hides pay geld. There is land (enough) for 4 ploughs. There is 1 bordar owning nothing. T.R.E. it was worth 20 shillings and afterwards 40 shillings. Now 12 pence.

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The same William holds Beteslawe [Beslow]. Goduin held it. There ½ hide pays geld. There is land (enough) for two ploughs. In demesne there is ½ plough and 1 serf, and (there is) 1 freeman with 2 bordars. It was worth 11 shillings. Now 5 shillings.

The same William holds Buterel [Buttery]. Turchil held it. There 1 hide pays geld. There is land (enough) for 2 ploughs. Only 3 oxen are there. It was worth 6 shillings. Now 2 shillings.

The same William holds Etone [Eyton on the Weald Moors] and Warin (holds) of him. Wighe and Ouiet held it for 2 manors. There 3 hides pay geld. In demesne there are 2 ploughs and 4 oxherds. And (there are) 2 villeins and 1 bordar with ½ plough. And 1½ ploughs more might be (employed). T.R.E. it was worth 33 shillings. Now 20 shillings.

The same William holds Brochetone [Bratton [77]]. Erniet held it. There 1½ hides pay geld. There is land (enough) for 4 ploughs. 5 bordars are there and own nothing. T.R.E. it was worth 24 shillings. Now almost waste. Warin holds it.

The same William holds Hortune [Horton] and Warin (holds) of him. Erniet held it. There 3 virgates of land pay geld. There is land (enough) for one plough. It is waste. There is also ½ league of woodland and one 'haye.'

The same William holds Lauelei [Lawley]. Erniet held it. There ½ hide pays geld. There is land (enough) for 1 plough. It was and is waste.

### In Culvestan [ ] Hundred

The same William holds Ledewic [Upper Ledwich] and Berner (holds) of him. Uluric held it. There 2 hides pay geld. There is land (enough) for 4 ploughs. In demesne there is 1 plough and 2 oxherds, and (there are) 2 villeins and 4 bordars with 1 plough. T.R.E. it was worth 13 shillings and 4 pence. Now 10 shillings. He found it waste.

The same William holds Middeltone [Middleton Higford] and Berner (holds) of him. Uluric and Eduin held it for 2 manors. There 2 hides pay geld. There is land (enough) for

[72] Eyton (*Shrops.* ix, 185) suggested Market Drayton.

[73] Near Wem.

[74] Against this entry, in the margin, is put 'K' (for 'kalumpnia') to show that the holding was in dispute.

[75] The identification is proved by the descent; Eyton, *Shrops.* viii, 20.

[76] In Hinstock; appears as 'Colleshulle' in 1431; *Feud. Aids*, iv, 270.

[77] Formerly 'Brocton'; Eyton, *Shrops.* viii, 37.

8 ploughs. In demesne there are 2 ploughs and 4 oxherds, and (there are) 1 villein and 8 bordars with 1 plough. A mill of 2 shillings (value). It was worth 20 shillings. Now 14 shillings.

The same William holds SUDTONE [Little Sutton]. Aluric held it. There ½ hide pays geld. There is land (enough) for 2 ploughs. In demesne there is 1 with 2 oxherds and 1 bordar. It was worth 3 shillings. Now 9 shillings. He found it waste.

The same William holds MERSTUN [Marston[78]]. Gamel and Uluric held it. There 1½ hides pay geld. There is land (enough) for 3 ploughs. In demesne there is 1 plough and 2 serfs, and (there are) 3 bordars. It was worth 15 shillings. Now 10 shillings.

The same William holds ESLEPE [Sleap Magna[79]]. Uluric held it (and) was a free man. There ½ hide pays geld. There is land (enough) for 1 plough. There is 1 free man there with 1 plough. Wood(land) for fattening 6 swine. It was and is worth 5 shillings.

The same William holds SUDTELCH [ [80]]. Asci held it and was a free man. Half a hide geldable there. Land enough for 2 ploughs. It was worth 5 shillings. Now it yields 2 shillings.

### IN CONDETRET [ ] HUNDRED

The same W(illiam Pantulf) holds INGURDINE [Ingardine]. Eduin held it and was a free man. There 1 virgate of land pays geld. There is land (enough) for ½ plough. (The half plough) is in demesne. It was and is worth 5 shillings.

### IN PATINTON [PATTON] HUNDRED

William (Pantulf) holds BUCHEHALE [ ].[81] Elmer held it. There is 1 virgate. There is land (enough) for ½ plough. It was and is waste.

### IN ODENET [HODNET] HUNDRED

WILLIAM Malbedeng holds of Earl Roger GRAVEHUNGRE [Gravenhanger]. Æluric and Ulgar held it for 2 manors and were free. There 1 hide of land pays geld. There is land (enough) for 4 ploughs. 2 radmans have 1 plough there. One 'haye' there. T.R.E. it was worth 13 shillings. Now 12 shillings. He found it waste.

The same William holds WAURE [Woore]. Lewin and Edric held it for 2 manors and were free. There 1 hide pays geld. There is land (enough) for 3 ploughs. Two radmans have there 1 plough with 3 bordars. Wood(land) for fattening 60 swine. T.R.E. (the manor) was worth 23 shillings. Now 10 shillings. He found it waste.

The same William holds DERINTUNE [Dorrington]. Lewin and Edric held it for 2 manors and were free. There 1 hide pays geld. There is land (enough) for 3 ploughs. One radman is there with 1 plough and 1 bordar. Wood(land) there for fattening 100 swine. T.R.E. it was worth 14 shillings. Now 8 shillings. He found it waste.

The same William holds ANELEGE [Onneley]. Edric held it. There 1 virgate of land pays geld. T.R.E. it was worth 5 shillings. Now it is waste.

### IN BASECHERCHE [BASCHURCH] HUNDRED

WALCHELIN holds of Earl Roger GRIVELESUL [Grinshill]. Leuric and Godric, Seward and Algar held it for 3 manors and were free. There 2 hides pay geld. There is land (enough) for 2 ploughs. There are 3 free men there and they pay 7 shillings yearly. This land was worth 32 shillings T.R.E.

### IN ELNOELSTRUI [ ] HUNDRED

The same Walchelin holds FAVENTREI [Faintree]. Ulchetel, Archetel, Ulviet, Ælwi, Ordwi, and Ordric held it for 6 manors, and these were free thegns. There 2 hides pay geld. There is land (enough) for 5 ploughs. In demesne there are 1½ ploughs and 1 serf, and (there are) 2 villeins and 5 bordars with 2 ploughs. T.R.E. it was worth 27 shillings. Now 20 shillings. He found it waste.

### IN ELNOELSTRUI [ ] HUNDRED

OSBERN[82] holds of Earl Roger BEGHESOVRE [Badger] and Robert (holds) of him. Bruniht held it and was a free man. There ½ hide pays geld. There is land (enough) for 2 ploughs. In demesne there is 1 plough and (there are) 4 bordars with 1 plough. Wood(land) for fattening 30 swine. It was worth 7 shillings. Now 10 shillings.

[78] Near Diddlebury.

[79] In Baschurch hundred ; the rubric is omitted.

[80] Probably in Baschurch hundred.

[81] At first conjectured by Eyton (*Shrops.* iv, 27) to be a mistake for Muchale or Mughale (afterwards Monk Hall), part of which was connected with Acton Round, a manor of the Fitz Alans, to whom Pantulf's manors in South Shropshire passed. In a later volume (xi, 316) he suggested this was part of Bucknall in Leintwardine hundred, which appears 'Buchehalle' in Domesday. The former appears the more probable identification.

[82] Osbern fitz Richard of Richards Castle; Eyton, *Shrops.* i, 65.

The same Osbern holds BROCTONE [Brockton]. Bruniht held it, who (occurs) above. There is 1 virgate of land and 8 acres. There is land (enough) for 1 plough. 1 bordar is there with 2 oxen. It was worth 8 shillings. Now 12 shillings. He found it waste.

The same Osbern holds RUITONE [Ryton]. Wiuar and Bricstual held it for 2 manors. There 5 hides pay geld. There is land (enough) for 8 ploughs. In demesne there are 2 ploughs and 3 serfs with 3 bordars. A mill is there yielding 8 sextaries of rye. T.R.E. it was worth 30 shillings. Now 20 shillings. He found it waste.

IN BASECHERCHE [BASCHURCH] HUNDRED

ODO[83] holds of Earl Roger HORDELEI [Hordley]. Algar and Dunniht held it for 2 manors and were free. There 2 hides pay geld. There is land enough for 3 ploughs. 5 villeins and 5 bordars are there with 2 ploughs. Wood(land) for fattening 60 swine. T.R.E. it was waste. Now it pays 15 shillings.

The same Odo holds UDEFORD[84] [ ] and RUITONE [Ruyton-of-the-Eleven Towns]. Levenot held it for 2 manors. There 1½ hides pay geld. There is land (enough) for 4 ploughs. 4 villeins and 2 bordars have 2 ploughs there. In demesne there is 1 plough and 2 oxherds. Wood(land) for fattening 40 swine, and 5 fisheries rented by the villeins (*in censu villanorum*). T.R.E. it was waste and afterwards was worth 13 shillings. Now 20 shillings.

IN MERSET [ ] HUNDRED

The same Odo holds WICHE [Wykey]. Earl Eduin held it. There are there 7 hides with 3 berewicks. There is land (enough) for 10 ploughs, and it pays geld. In demesne there are 3 ploughs and 6 oxherds, and (there are) 4 bordars with 1 plough. There is a fishery yielding nothing, and wood(land) in which there is one haye. It was waste. Now it is worth 15 shillings.

IN RECORDIN [WROCKWARDINE] HUNDRED

TUROLD[85] holds of Earl Roger LANGEFORD [Longford]. Earl Eduin held it. There are 6 hides, with 4 berewicks, and they pay geld. In demesne are 2 hides and there 8 villeins have 3 ploughs. Two knights hold of him 4 hides and there have 3 ploughs and 4 oxherds, and (there are) 7 villeins and 3 bordars and 1 radman with 3½ ploughs, and there might be 4 ploughs more (employed). A mill there. T.R.E. the whole manor was worth 9 pounds. Now 44 shillings. He found it waste.

The same Turold holds CATEWINDE [Chetwynd]. The Countess Godeva held it. There 3 hides pay geld. There is land (enough) for 8 ploughs. In demesne there are 3, and 6 oxherds, and (there are) 2 villeins and 3 bordars with 1 plough. There there is a priest, and a mill with 2 fisheries yielding 5 shillings and 64 sticks (*stich*') of eels.[86] A small wood there. T.R.E. it was worth 25 shillings. Now 50 shillings. He found it waste.

The same Turold holds PLIVESDONE [Pilson]. Earl Eduin held it. There 1 hide pays geld. There is land (enough) for 4 ploughs. T.R.E. it was worth 8 shillings. Waste he found it and it is (so now).

The same Turold holds SEMEBRE [Sambrook]. Ulgar held it. 1½ hides there. There is land (enough) for 7 ploughs. One knight holds it of him and has 1 plough, and (there are) 5 bordars with 2 ploughs; and there is a mill yielding 64 pence. T.R.E. it was worth 45 shillings. Now 16 shillings. He found it waste.

The same Turold holds HUGLE [Howle] and Walter (holds) of him. Batsuen held it. There 2 hides pay geld. There is land (enough) for 5 ploughs. In demesne there are 2 ploughs and 4 oxherds and a mill of 64 pence (annual value). T.R.E. it was worth 20 shillings. Now 16 shillings. He found it waste.

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The same Turold holds LAUELIE [Lawley] and Hunnit (holds) of him. There 1 hide pays geld. There is land (enough) for 2 ploughs. In demesne there is 1 and 4 serfs, and 1 villein (is also) there. It was worth 12 shillings. Now 10 shillings.

IN ODENET [HODNET] HUNDRED

The same Turold holds BARDESTUNE [Bearstone]. Ulgar held it and was a free man. There 1 hide pays geld. There is land (enough) for 5 ploughs. In demesne there is one and 2 oxherds. And (there are) 3 bordars with 1 plough. A mill there of 3 shillings (annual value). Wood(land) for fattening 60 swine. T.R.E. it was worth 20 shillings. Now 10 shillings. He found it waste.

The same Turold holds DRAITUNE [Little Drayton]. The Countess Godeva held it. There 1 hide pays geld. There is land (enough) for 5 ploughs. In demesne there is 1 with 2 ox-

[83] Odo de Bernières.

[84] Perhaps one of the original 11 town(ship)s, of which only 5 now remain.

[85] Turold de Verley; see Introduction, p. 298.

[86] A stick contained 25 eels.

herds, and 1 villein. T.R.E. it was worth 8 shillings. Now 6 shillings and 8 pence. He found it waste.

IN BASECHERC [BASCHURCH] HUNDRED

The same Turold holds MORTONE [Moreton Corbet] and Hunnit with his brother (holds) of him. They held it and were free men. There 1 hide pays geld. There is land (enough) for 2 ploughs. These are there with 5 serfs and 1 bordar. It was worth 10 shillings. Now 16 shillings. The same men held it T.R.E.

The same Turold holds PRESTON [Preston Brockhurst] and Hunnit (holds) of him. The same Hunni and Uluiet held it and were free. There 1½ hides for 2 manors and they paid geld. There is land (enough) for 2 ploughs. In demesne there is 1 and 2 serfs, and (there are) 3 villeins. It was and is now worth 13 shillings.

IN ELNOELSTRUI [ ] HUNDRED

The same Turold holds WILIT [Willey] and Hunnit (holds) of him. He himself held it and was free. There ½ hide pays geld. There is land (enough) for 2 ploughs. They are there, with 2 villeins and 2 bordars. It was and is worth 5 shillings.

IN CONODOVRE [CONDOVER] HUNDRED

The same Turold holds PICEFORD [Pitchford]. Edric and Leuric and Uluric held it for 3 manors and were free. There 3 hides pay geld. There is land (enough) for 5 ploughs. In demesne there are 3, and 3 serfs and 3 oxherds, and (there are) 1 villein and 3 bordars and a smith and 1 radman, with 2 ploughs. Wood(land) there for fattening 100 swine. T.R.E. it was worth 8 shillings and afterwards 16 shillings. Now 40 shillings.

The same Turold holds WIGEWIC [Wigwig]. Elmar held it and was a free man. There 1 hide pays geld. There is land (enough) for 2 ploughs. It is (*sic*) there in demesne and 4 serfs and 2 villeins and 1 bordar with ½ plough. Wood(land) for fattening 50 swine. T.R.E. it was worth 15 shillings and afterwards 3 shillings. Now 10 shillings.

IN CONODOVRE [CONDOVER] HUNDRED

PICOT[87] holds of Earl Roger BRANTUNE [Brompton]. Ernui and Elmer held it for 2 manors and were free men. There 3 hides pay geld. There is land (enough) for 6 ploughs. In demesne there are 1½ and 3 oxherds. And (there are) 7 villeins and 2 bordars with 2½ ploughs. T.R.E. it was worth 25 shillings and afterwards 20 shillings. Now 40 shillings.

IN RINLAU [ ] HUNDRED

The same Picot holds MUNETE [Myndtown] and Leuric (holds) of him. He held it and was a free man. There 1½ hides pay geld. There is land (enough) for 3½ ploughs. In demesne there are 1½ ploughs and 2 serfs. And (there are) 4 villeins and 4 bordars with 2 ploughs. One haye there. T.R.E. it was worth 60 shillings. Now 30 shillings.

The same Picot holds CLUTONE [Clunton]. Elmund and Uluric and Elward held it for 3 manors and were free. There 4 hides pay geld. There is land (enough) for 12 ploughs. In demesne there are 2 ploughs and 6 serfs. And (there are) 4 villeins and 8 bordars and 1 radman with 2 ploughs. There were there 5 hayes. T.R.E. it was worth 7 pounds and 14 shillings and afterwards 5 shillings. Now 40 shillings.

The same Picot holds CLUNEBERIE [Clunbury]. Suen held it. This manor never paid geld, nor was it assessed in hides (*hidatum*). T.R.E. it was worth 4 pounds. There were there 6 ploughs.

The same Picot holds CHENPITUNE [Kempton]. The same Suen held it. There 4 hides pay geld. There is land (enough) in these 2 manors for 14 ploughs. In demesne there are 4, and 13 serfs. And (there are) 8 villeins and 2 bordars with 5 ploughs; and 2 Welshmen pay 14 pence. Wood(land) there for fattening 100 swine. 3 hayes also there. These 2 manors were worth T.R.E. 8 pounds and afterwards 3 pounds. Now 6 pounds.

The same Picot holds HOPE [Hopesay]. Edric held it and was a free man. There 7 hides pay geld. There is land (enough) for 14 ploughs. In demesne there are 2 ploughs and 6 serfs. And 14 villeins and a smith and a reeve with 6 ploughs. 2 hayes are there. T.R.E. it was worth 10 pounds and afterwards 3 pounds. Now 7 pounds.

The same Picot holds SIBETUNE [Sibdon Carwood]. Suen held it and was a free man. There 2 hides pay geld. There is land (enough) for 3 ploughs. In demesne there is 1, and 4 serfs. And (there are) 2 radmans with 1 plough. Wood(land) for fattening 100 swine is there. T.R.E. it was worth 20 shillings and now 30 shillings.

The same Picot holds CLUNE [Clun]. Edric held it and was a free man. There 15 hides pay geld. There is land (enough) for 60 ploughs. In demesne there are 2 and 5 serfs. And (there are) 10 villeins and 4 bordars with 5 ploughs,

[87] Picot de Say; see Introduction, p. 297.

and there is a mill supplying the manor-house (*curie*). And 4 Welshmen pay 2 shillings and 4 pence. Walter holds of Picot 2 hides of this land and a knight (named) Picot 3 hides and Gislold 2 hides. These men have 3 ploughs and 2 serfs and 2 oxherds. And 8 villeins and 4 bordars and 2 Welshmen (are there) with 2 ploughs among them all. There 2 radmans pay 2 animals as rent (*de censu*). The whole manor T.R.E. was worth 25 pounds and afterwards 3 pounds. Now what Picot holds 6 pounds and 5 shillings. What the knights hold 4 pounds less 5 shillings.

The same P[icot] holds Posselau [Purslow]. Uluric held it and was a free man. There 1 hide pays geld. There is land (enough) for 2 ploughs. T.R.E. it was worth 15 shillings. It is waste.

The same P[icot] holds Berlie [Barlow]. Uluric held it. Half a hide (is) there.

The same P[icot] holds Obelie [Obley]. Ælmund held it. 2 hides are there. These lands were and are waste.

The same P[icot] holds Opetune [Hopton]. Edric held it and was a free man. There 2 hides pay geld. There is land (enough) for 4 ploughs. T.R.E. it was worth 40 shillings. Now it is waste.

The same P[icot] holds Cozetune [Corston]. Suein held it and was a free man. There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there is 1. And (there are) 2 villeins and 1 bordar with 1 plough. T.R.E. it was worth 20 shillings. Now the same.

The same P[icot] holds Egedune [Edgton]. Suein held it and was a free man. There 2 hides pay geld. There is land (enough) for 9 ploughs. In demesne there are 2, and 6 serfs. And (there are) 5 villeins and 1 bordar with 2 ploughs. T.R.E. it was worth 60 shillings and afterwards 15 shillings. Now 30 shillings.

### In Basecherc [Baschurch] Hundred

The same P[icot] holds Witesot [Fitz].[88] Hunnith held it and was a free man. There 3 hides pay geld. There is land (enough) for 5 ploughs. In demesne there are 2 ploughs and 9 serfs. And (there are) 4 villeins and 1 radman and 1 smith with 2 ploughs among all. T.R.E. it was worth 40 shillings, and afterwards 60 shillings. Now 6 pounds.

The same P[icot] holds Gellidone[89] [Merrington]. Hunnith held it. There 2 hides pay geld. There is land (enough) for 5 ploughs. In demesne there is 1, and 4 serfs. And (there are) 3 villeins and 4 bordars and 1 radman with 2 ploughs among them all. Wood(land) there for fattening 24 swine. T.R.E. it was worth 15 shillings and afterwards as much. Now 40 shillings.

The same P[icot] holds Weshope [Westhope[90]]. Elmund held it. There 2 hides pay geld. There is land (enough) for 4 ploughs. In demesne there are 2, and 6 serfs. And (there are) 4 villeins with 1 plough. T.R.E. it was worth 15 shillings and afterwards 6 shillings. Now 25 shillings.

### In Lenteurde [Leintwardine] Hundred

The same P[icot] holds Wistanestune [Woolston[91]], and 2 knights (hold) of him. Spirtes the priest held it. There 2 hides pay geld. there is land (enough) for 8 ploughs. There are 6 villeins and a priest and 3 bordars and 1 radman with 4 ploughs. It is worth 20 shillings.

The same P[icot] holds Caurtune [ ]. The church of St. Almund held it in (free) alms. There ½ hide pays geld. There is land (enough) for 1 plough. It was and is waste. T.R.E. it was worth 3 shillings. Picot holds it unjustly.

The same P[icot] holds of the earl 3 virgates of land in Lenteurde [Leintwardine]. Fulco (holds) of him. There is land (enough) for 2 ploughs. It yields 5 shillings (annually).

The same P[icot] holds Chinbaldescote [ ]. The church of St. Mary of Brunfelde [Bromfield] held it. There 5 hides pay geld with one 'berewick.' There is land (enough) for 7 ploughs. It was and is waste. 3 'hayes' are there.

The same P[icot] holds Munetune [Minton]. Edric held it. There 1 hide pays geld. There is land (enough) for 2 ploughs. It was and is waste. One 'haye' is there.

The same P[icot] holds Edretehope [? Hope Bendrid].[92] Edric held it. There 2 hides and 1 virgate pay geld. There is land (enough) for 6 ploughs. It was and is waste. 2 'hayes' are there.

The same P[icot] holds Clone [Clungunford]. Gunward held it. There 6 hides pay geld.

[88] Earlier forms of the name were Phitesoth and Fiteshod; Eyton, *Shrops.* x, 145.

[89] Later forms were Gulidone, Muridone, and Merrington.

[90] In Leintwardine hundred; the rubric is placed too low; Eyton, *Shrops.* xi, 307.

[91] In Wistanstow parish. The name suggests a slightly corrupt form of Wistanstow, but Eyton (op. cit. xi, 308) considered Woolston could be traced to Picot's successors, and suggested that the clerk should have written 'Wlstanestune.' For 4 hides held by Spirtes in Wistanstow see below, p. 348.

[92] Near Knighton.

There is land (enough) for 15 ploughs. In demesne there are 3, and 8 serfs. And (there are) 8 villeins and 4 bordars with 4 ploughs. A mill there of 54 pence (annual value). Fulco holds of Picot 1½ hides of this land and has 2 ploughs in demesne and 4 oxherds. And (there are) 3 villeins and 3 bordars with 3 ploughs, and (there is) a mill of 32 pence (annual value). The whole T.R.E. was worth 12 pounds and afterwards 30 shillings. Now 4 pounds in all.

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The same Picot holds BETIETETUNE [Bedstone] and Fulco (holds) of him. Uluric held it. There 2 hides pay geld. There is land (enough) for 4 ploughs. It was and is waste.

The same Picot holds EDELACTUNE [? Adley].[93] Bernard (holds) of him. There 3 hides and 3 virgates pay geld. There is land (enough) for 8 ploughs. In demesne there is 1 plough with 2 oxherds. It is worth 6 shillings. There is 1 league of wood(land). It was and is waste for the greater part.

The same P[icot] holds HIBRIHTESELLE [ ] and Fulco (holds) of him. Ulchetel held it. There 1 virgate of land pays geld. There is land (enough) for 1 plough. It is there with 2 bordars. It is worth 4 shillings.

### IN ODENET [HODNET] HUNDRED

HELGOT holds of Earl Roger NORTUNE [Norton in Hales]. Azor held it and was a free man. There 3 hides pay geld. There is land (enough) for 6 ploughs. 1 radman is there with 1 plough and 4 villeins with 2 ploughs. Wood(land) for fattening 200 swine. T.R.E. it was worth 30 shillings. Now 20 shillings.

### IN PATINTONE [PATTON] HUNDRED

The same Helgot holds CLEIE [Clee St. Margaret]. Aluric held it and was a free man. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there is 1, and 4 serfs. And (there are) 2 villeins with 1 plough and 2 bordars and a mill supplying the homestead (*curie*). It was worth 8 shillings. Now 10 shillings.

The same H[elgot] holds MELICOPE [Millichope]. Gamel held it and was free. There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there is 1, and 4 serfs. It was worth 50 shillings. Now 15 shillings.

The same H[elgot] holds OXIBOLA [Oxenbold]. Edric and Siward held it for 2 manors and were free. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there is ½ plough and 1 oxherd. And (there is) 1 villein and 1 bordar and 1 French-born (man) with 1½ ploughs. It was worth 11 shillings. Now 8 shillings.

The same H[elgot] holds STANTUNE [Castle Holdgate]. Chetel held it and was a free man. There 2 hides pay geld. There is land (enough) for 3 ploughs. One radman is there with ½ plough and (there are) 1 serf and 1 bordar. It was worth 8 shillings. Now 3 shillings.

The same H[elgot] holds STANTUNE [Castle Holgate]. Genust and Elward, Dunning and Elveva (held it) for 4 manors and were free with their lands. There 3 hides pay geld. There is land (enough) for 6 ploughs. There Helgot has a castle, and 2 ploughs in demesne and 4 serfs. And (there are) 3 villeins and 3 bordars and 1 French-born (man) with 3½ ploughs. There is a church and priest. T.R.E. it was worth 18 shillings. Now 25 shillings. He found it waste.

### ✕ IN CONODOVRE [CONDOVER] HUNDRED

The same H[elgot] holds PRENE [Preen] and Richard (holds) of him. Eduin held it and was a free man. There 3 hides pay geld. There is land (enough) for 3 ploughs. In demesne there is 1 plough and 4 serfs. Godebold has 1 hide of this land and has there 1 plough and 1 serf. And (there is) 1 villein and 1 bordar with 1 plough. Woodland for 100 swine. T.R.E. it was worth 20 shillings. Now 10 shillings. He found it waste.

The same H[elgot] holds HARLEGE [Harley]. Edric, Ulmar, Elmund, and Edric held it for 4 manors and were free men. There 4 hides pay geld. There is land (enough) for 4½ ploughs. In demesne there are 1½ ploughs and 3 serfs and (there are) 1 villein and 1 bordar. There is a mill and wood(land) for fattening 100 swine. T.R.E. it was worth 21 shillings. Now 40 shillings. He found it waste.

The same H[elgot] holds BELLEURDINE [Belswardine]. Elmund held it and was a free man. There ½ hide pays geld. The land is (enough) for 2 ploughs. In demesne there is ½ plough and 1 serf and (there are) 2 bordars with ½ plough. It was worth 10 shillings, now 4 shillings.

### IN BASECHERCH [BASCHURCH] HUNDRED

The same H[elgot] holds FELTONE [Felton Butler]. Aluric, Ælward, and Alchen held it and were free men; (they held it) for 3 manors. There 3 virgates of land pay geld. There is land (enough) for 5 ploughs. In demesne there is 1 plough and 3 serfs and (there

[93] Eyton, *Shrops.* xi, 312.

are) 3 villeins with 1 plough. Bernard (holds it) of Helgot. T.R.E. it was worth 14 shillings. Now 15 shillings.

In Elnoelstrui [ ] Hundred

The same H[elgot] holds Bosle [Broseley]. Gethne held it and was a free man. There 1 hide pays geld. There is land (enough) for 2 ploughs. In demesne there is 1, and 4 serfs, and (there are) 4 bordars and 1 radman with 1 plough. T.R.E. it was worth 16 shillings and 1 penny. Now 12 shillings. He found it waste.

The same H[elgot] holds Madolea [Meadowley]. Austin held it. He was free. There ½ hide pays geld. Richard holds it of Helgot. There is land (enough) for 6 ploughs. In demesne there is 1 plough and 3 serfs, and (there is) 1 radman with ½ plough and 2 bordars. T.R.E. it was worth 30 shillings. Now 11 shillings. When he received it, 2 shillings.

In Recordin [Wrockwardine] Hundred

The same Helgot holds Cerlecote [Charlcote[94]]. Elsi held it and was free. There is land (enough) for 2 ploughs. It is and was waste. It was worth 10 shillings.

The same H[elgot] holds Ofitone [Uffington]. Genut and Elveva held it for 2 manors and were free. There 5 hides pay geld. There is land (enough) for 12 ploughs. In demesne there are 1½ ploughs and 3 serfs and 4 bondwomen. And (there are) 3 villeins and 2 bordars and 2 French-born (men) with 2 ploughs. Half a league of wood(land) there. T.R.E. it was worth 30 shillings. Now a like amount.

In Culvestan [ ] Hundred

The same H[elgot] holds Sudtone [Great Sutton] and Herbert (holds) of him. Aluric held it and was free. There 2 hides pay geld. There is land (enough) for 5 ploughs. In demesne there are 2, and 4 oxherds. And (there are) 4 villeins and 1 bordar with 3 ploughs. A mill is there of 3 shillings (annual value). T.R.E. it was worth 20 shillings. Now 25 shillings. He found it waste.

The same H[elgot] holds Scevintone [Steventon]. Revensuard held it and was a free man. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there are 2, and 4 serfs and 2 bondwomen, and (there are) 3 villeins with 2 ploughs. T.R.E. it was worth 12 shillings. Now 15 shillings.

[94] Near Aston Botterell; in 'Elnoelstrui' hundred, the new rubric being inserted above it by mistake.

The same H[elgot] holds Possetorne [Upper Poston]. Aluric held it. There 1 virgate of land pays geld. There is land (enough) for ½ plough. It was and is waste.

The same H[elgot] holds Bolledone [Bouldon]. Seward and Elmund held it for 2 manors and were free. There 2 hides pay geld. There is land (enough) for 3 ploughs. In demesne there are 2 ploughs and 4 oxherds. It was worth 8 shillings. Now 15 shillings. He found it waste.

In Lenteurde [Leintwardine] Hundred

The same H[elgot] holds Ælmundestune [Alcaston].[95] Edric held it. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there is 1, and 2 serfs, and (there are) 5 villeins with 1 plough. It was worth 20 shilings. Now 8 shillings.

In Lenteurd [Leintwardine] Hundred

Hugh son of Turgis holds of Earl Roger Elmundewic [Chelmick].[96] Edric held it with 1 berewick. There 4 hides pay geld. There is land (enough) for 6 ploughs. There 9 villeins have 3 ploughs. T.R.E. it was worth 12 shillings. Now 8 shillings. It was waste.

In Conodovre [Condover] Hundred

Hugh holds of the earl Wildredelega [Wilderley]. Chetel held it and was free. There 2 hides pay geld. There is land (enough) for 4 ploughs. In demesne there is 1, and 4 serfs. And (there are) 3 villeins with 1 plough. Wood(land) there for fattening 100 swine. T.R.E. it was worth 30 shillings. Now 20 shillings. When he got it 10 shillings.

In Culvestan [ ] Hundred

The same H[elgot] holds Fordritishope [Hope Bowdler]. Edric Saluage held it. There 3 hides pay geld. There is land (enough) for 6 ploughs. In demesne there are 2, and 4 serfs and 2 bondwomen. And (there are) 2 villeins with 1 plough. (There are) 2 leagues of wood(land). T.R.E. it was worth 25 shillings. Now 15 shillings.

In Recordine [Wrockwardine] Hundred

Gerard[97] holds of Earl Roger Chinardeseie [Kinnersley]. Willegrip held it. There 1 hide pays geld. There is land (enough) for 4 ploughs.

[95] See Eyton, *Shrops.* xii, 1.

[96] Formerly 'Chelmundewick'; Eyton, *Shrops.* xi, 350.

[97] Gerard de Tournai; see Introduction, p. 298.

In demesne there is 1 plough and 3 serfs. And (there are) 4 villeins and 3 bordars with 2 ploughs. T.R.E. it was worth 21 shillings. Now 18 shillings.

The same Girard holds Opetone [Uppington]. Godwin held it. There 2 hides pay geld. There is land (enough) for 5 ploughs. In demesne there are 3 ploughs and 6 oxherds. And (there are) 5 villeins and 4 bordars with 2 ploughs. Wood(land) 1 league in length, and 1 haye there. T.R.E. it was worth 25 shillings. Now 31 shillings. He found it waste.

The same G[erard] holds Sawesberie [Shawbury]. Edric and Eliet held it for 2 manors. There 1½ hides pay geld. There is land (enough) for 8 ploughs. In demesne there is 1, and 2 serfs. A church and a priest and 3 bordars and 1 free man and a mill of 5 shillings (value). T.R.E. it was worth 12 shillings. Now 16 shillings.

The same G[erard] holds Cerlintone [Cherrington]. Uluiet held it. There 3 hides pay geld. The land is (enough) for 6 ploughs. In demesne there are 1½, and 3 oxherds. And (there are) 2 villeins and 3 bordars with 1 plough. T.R.E. it was worth 23 shillings. Now 22 shillings. He found it waste.

The same G[erard] holds Cestulle [Chesthill [98]]. Ledmi held it. There 1 hide and 3 virgates pay geld. There is land (enough) for 5 ploughs. In demesne there is 1, and 2 serfs. And (there are) 2 bordars and 1 radman with 1 plough. T.R.E. it was worth 15 shillings. Now a like amount.

### In Odenet [Hodnet] Hundred

The same G[erard] holds Sanford [Sandford]. Uluiet held it and was free. There 3 hides pay geld. The land is (enough) for 3 ploughs. In demesne there are 1½, and 2 serfs. And (there are) 4 villeins with 1 plough. Wood(land) there for fattening 30 swine, and a 'haye.' T.R.E. it was worth 15 shillings. Now 10 shillings. He found it waste.

The same G[erard] holds Elleurdine [Ellerdine]. Dodo held it and was a free man. There 1 hide and the third part of another hide pay geld.[99]

The same G[erard] holds Hatune [Cold Hatton]. Godric held it and was free. There ½ hide and 2 parts of one virgate pay geld.[99] There is land (enough) for 3 ploughs in these 2 manors. In demesne there are 2 (ploughs) and 4 serfs, and 2 oxherds: and (there are) 6 bordars with 1 plough. T.R.E. it was worth 38 shillings. Now 20 shillings. He found it waste.

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The same G[erard] holds Baitune [Betton in Hales]. Ulchete held it and was a free man. There 3 hides pay geld. There is land (enough) for 6 ploughs. In demesne are 2 ploughs and 2 serfs and 2 oxherds, and (there are) 3 bordars with one plough. A mill is there, and wood(land) for fattening 60 swine, and 2 hayes are there. T.R.E. it was worth 40 shillings. Now 30 shillings.

The same G[erard] holds Walanceslau [Longslow]. Uluiet held it and was a free man. There 3 hides pay geld. There is land (enough) for 5 ploughs. In demesne there is 1 plough and 2 serfs, and one man there pays 40 pence. T.R.E. it was worth 10 shillings. Now 12 shillings.

The same G[erard] holds Istefelt [Ightfield]. Ulniet held it and was a free man. There 2 hides pay geld. There is land (enough) for 4 ploughs. A priest is there and 2 bordars with 1 plough. Wood(land) there for fattening 60 swine, and 2 hayes. It was worth 15 shillings. Now 10 shillings.

The same G[erard] holds Uluretone [Wollerton]. Oschetel held it and was a free man. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there are 2, and 7 serfs. And (there are) 3 villeins and 2 bordars and 1 radman with 1 plough. A mill is there of 10 shillings (value), and wood(land) for fattening 80 swine. T.R.E. it was worth 15 shillings. Now 25 shillings. He found it waste.

### In Patintun [Patton] Hundred

The same G[erard] holds Rohalle [Ruthall] and Gerelm (holds) of him. Oschil held it and was a free man. There ½ hide pays geld. There is land (enough) for 2 ploughs. In demesne there is ½ plough and 2 oxherds, and (there are) 3 bordars with ½ plough. T.R.E. it was worth 6 shillings. Now 8 shillings.

### In Basecherch [Baschurch] Hundred

The same G[erard] holds Betford [Bessford], and Robert (holds) of him. Oschetel and Dodo held it for 2 manors and were free men. There 3 hides pay geld. There is land (enough) for 3 ploughs. In demesne there is 1, and 3 serfs. And (there are) 3 villeins and 2 widow-women with 1 plough. T.R.E. it was worth 7 shillings and afterwards 5 shillings. Now 20 shillings.

The same G[erard] holds Prestone [Preston Brockhurst] and Robert (holds) of him. Bertunt

[98] A lost name; included Tern Hill; see Eyton, *Shrops.* viii, 200.

[99] The assessments of these two adjoining manors make up 2 hides; see Introduction, p. 284.

held it and was a free man. 1 virgate of land is there. There is land (enough) for ½ plough. It was and is waste.

In Elnoelstrui [ ] Hundred

The same G[erard] holds Sudtone [Sutton Maddock[100]]. Earl Morcar held it. There 4 hides pay geld. There is land (enough) for 12 ploughs. In demesne there are 2 ploughs and 6 serfs. And (there are) 12 villeins and 4 bordars with 7 ploughs; and a certain knight there has 1 plough and 2 serfs. T.R.E. it was worth 40 shillings. Now a like amount.

The same G[erard] holds Etone [? Hatton] and William (holds) of him. Turgod held it and was a free man. There ½ hide pays geld. There is land (enough) for 3 ploughs. In demesne there is 1 and 1 serf. And (there are) 4 bordars, and one settler (*hospes*)[101] pays 2 shillings. T.R.E. it was worth 12 shillings. Now 11 shillings. He found it waste.

The same G[erard] holds Stochetone [Stockton] and Hugh holds it of him. Edwin and Ordui held it for 2 manors and were free men. There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there is ½ plough and 1 serf. And (there is) 1 villein and 1 bordar with ½ plough. T.R.E. it was worth 12 shillings. Now 4 shillings.

In Odenet [Hodnet] Hundred

Nigel holds of Earl Roger Eldredelei [Adderley]. Edric held it and was a free man. There 3 hides pay geld. There is land (enough) for 6½ ploughs. In demesne there is 1 and 2 oxherds. And (there are) 4 villeins with 1 plough. 2 'hayes' are there. It was and is worth 15 shillings.

The same N[igel] holds Savintune [Shavington]. Dodo held it and was free. There ½ hide pays geld. There is land for 4 ploughs. In demesne there is ½ (plough) and 2 serfs. And (there are) 3 bordars with ½ plough. It was worth 12 shillings. Now 15 shillings. He found it waste.

The same N[igel] holds Sponelege [Spoonley]. Dunning held it and was free. There 1 hide pays geld. There is land (enough) for 2 ploughs. It was and is waste. T.R.E. it was worth 20 shillings.

The same N[igel] holds Cavrahalle [Calverhall]. Edmaer and Elwi held it for 2 manors and were free with these lands. 1 hide and 3 virgates are there. There is land (enough) for 6 ploughs. This land pays geld. In demesne there is 1 (plough) and 2 oxherds. And (there are) 4 villeins with 1 plough. Wood(land) for fattening 20 swine. T.R.E. it was worth 18 shillings. Now it pays 20 shillings and one falcon.

In Conodovre [Condover] Hundred

Norman[102] holds of Earl Roger Cantelop [Cantlop]. Edric held it and was a free man. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there are 2 (ploughs) and 6 serfs, and (there are) 4 villeins with 1 plough. A mill there of 10 shillings (annual value). T.R.E. it was worth 20 shillings, and afterwards 4 pounds and 10 shillings. Now 110 shillings.

The same N[orman] holds Lege [Lee Brockhurst].[103] Uluiet and Wictric and Elfac held it for 3 manors and were free. There 1 hide pays geld. There is land (enough) for 2 ploughs. In demesne are these (ploughs) (*ipse*) with 4 oxherds and 1 bordar. A mill there of 6 shillings (annual value). T.R.E. it was worth 13 shillings. Now 3 pounds. He found it waste.

In Basecherch [Baschurch] Hundred

The same Norman holds Colesmere [Colemere]. Aldiet held it. There 2 hides pay geld. There is land (enough) for 4½ ploughs. In demesne there is 1, and (there are) 2 villeins and 2 bordars with ½ plough. And 4 settlers (*hospites*)[104] there pay 40 pence. T.R.E. it was worth 10 shillings. Now 30 shillings. He found it waste.

The same N(orman) holds Estone [ ] and Fulcher (holds) of him. Elnod held it. There 2½ hides pay geld. The land is (enough) for 7 ploughs. It was waste. Now it is at ferm for 36 shillings.

In Cheneltone [ ][105] is 1 hide which T.R.E. was and (still) is waste.

In Elnoelstrui [ ] Hundred

The same N(orman) holds Albricstone [Albrighton]. Algar and Godhit held it for 2 manors. There 1½ hides pay geld. There is land (enough) for 4 ploughs. In demesne there are 3 (ploughs)

[100] So called from Madoc son or grandson of Jorworth Goch who obtained a grant of Sutton in the reign of Henry II.

[101] See Introduction, p. 302.

[102] Norman Venator.

[103] In Hodnet hundred; the rubric has been omitted; Eyton, *Shrops.* ix, 361.

[104] See note above.

[105] There is a 'Kenstone' close to Hodnet, but it was not in Baschurch hundred, and the earlier form of the name appears to have been 'Kentenisdena' (Add. Chart. 20441). 'Cheneltone' was probably near Kenwick close to Colemere.

and 13 serfs. And (there are) 3 villeins and 3 bordars with 1 plough. Wood(land) there for fattening 100 swine. But now it is in the king's hand.[106] T.R.E. it was worth 21 shillings. Now 16 shillings. He found it waste.

The same N(orman) holds BISPETONE [Bishton]. Turgod held it and was a free man. There 1 hide pays geld. There is land (enough) for 6 ploughs. 2 French-born (men) there with 4 villeins and 2 bordars have 3 ploughs. Wood(land) there for fattening 10 swine. T.R.E. it was worth 30 shillings. Now 10 shillings.

IN BASECHERC [BASCHURCH] HUNDRED

ROGER Venator holds of Earl Roger SLACHEBERIE [ [107]]. Aluiet held it. There 1 hide pays geld. T.R.E. it was worth 5 shillings. Now it is waste.

In that hundred lies BRUMA [Broom Farm] of 1 hide, and it belongs to HANTONE [Welshampton] Albert's vill. About this the earl's men have contention [108] (*litigant*).

IN CONODOVORE [CONDOVER] HUNDRED

The same Roger holds WERENTENEHALE [Wrentnall]. Ernui and Chetel held it for 2 manors. 2 hides (are) there. There is land (enough) for 5 ploughs. In demesne there are 3 ploughs and 5 serfs. And (there are) 3 villeins and 1 radman with 1 plough. Wood(land) there for fattening 100 swine, and 1 'haye.' T.R.E. it was worth 60 shillings. Now 30 shillings. When he took it, it was worth 5 shillings. Of this land 1½ hides are claimed by the church of St. Chad, and the county (court) has decided that they were (vested) in the church before the time of King Edward, but they are ignorant in what manner they were lost to the church (*exierunt*).

The same Roger holds POLREBEC [Pulverbatch]. Hunnic and Uluiet held it for 3 manors. There 2 hides pay geld. There is land (enough) for 5 ploughs. In demesne there are 2 (ploughs) and 4 serfs, and (there are) 7 villeins with 3 ploughs. Wood(land) there for fattening 100 swine. 2 radmans are there. T.R.E. it was worth 6 pounds, now 30 shillings. When he received it it was worth 20 shillings.

IN PATINTUN [PATTON] HUNDRED

The same Roger holds BECHEBERIE [Beckbury]. Azor held it and was a free man. There 1 hide pays geld. There is land (enough) for 2 ploughs. One knight there pays 20 pence. T.R.E. it was worth 12 shillings.

The same Roger holds MOSTUNE [Moston].[108a] Dodo and Ulgar held it for 2 manors and were free. There 2 hides pay geld. The land is (enough) for 4 ploughs. 1 radman there has 1 plough with 2 villeins. T.R.E. it was worth 40 shillings. Now 15 shillings. He found it waste.

IN RECORDIN [WROCKWARDINE] HUNDRED

ROGER Venator holds HAUSTONE [Haughton]. Edwi held it. There 1 hide pays geld. There is land (enough) for 2 ploughs. One man (is) there who pays 6 shillings of ferm.

RALF the cook (*Cocus*) and Thochi hold of Earl Roger LUDECOTE [? Cotton on Tern [109]]. Dunning and Sawin held it and were free. There 2 hides pay geld. There is land (enough) for 3 ploughs. In demesne are 1½ ploughs and 2 oxherds and 5 serfs, and (there is) one bordar. T.R.E. it was worth 8 shillings. Now 16 shillings. It was partly waste.

IN RECORDIN [WROCKWARDINE] HUNDRED

FULCO holds of Earl Roger WIENTONE [Withington]. Ulwin and Uluric held it for 2 manors. There are 2½ hides. There is land (enough) for 4 ploughs. In demesne there are 2 ploughs and 4 serfs and 1 bondwoman, and (there are) 3 villeins and 1 bordar with 1½ ploughs. T.R.E. it was worth 15 shillings. Now 21 shillings. He found it waste.

The same Fulco holds WIDEFORD [Little Wytheford]. Godric held it. There is ½ hide. There is land (enough) for 2 ploughs. 1 plough is there, and (it) pays 3 shillings of ferm. T.R.E. it was worth 8 shillings.

IN MERSET [ ] HUNDRED

ERNUCION holds of the earl CHENARDELEI [Kinnerley]. Dunning and Algar held it for 2 manors. There 1 hide pays geld. There is land (enough) for 2 ploughs. One Welshman there pays 1 falcon by way of ferm, and there is ½ league of woodland.

IN CONEDOVRE [CONDOVER] HUNDRED

TEODULF holds of the Earl AVOCHELIE [Hawksley]. Elric held it and was a free man. There ½ hide pays geld. It was and is waste. A wood there for fattening 40 swine. This manor is at ferm for 6 pence.

[106] The only 'terra regis' in the shire.

[107] 'Slachbury' existed as late as 1255 and was evidently near Welshampton and Stanwardine-in-the-Fields; Eyton, *Shrops.* x, 199.

[108] See above, p. 323. Norman Venator seems to have been the successful litigant, as it was afterwards held by the Pichfords; Eyton, *Shrops.* x, 200.

[108a] In Hodnet hundred; rubric omitted.

[109] See Eyton, *Shrops.* ix, 359. Cotton was in Hodnet hundred, the rubric being omitted here.

The same Teodulf holds POLELIE [Pulley]. (Queen) Edith (*Eddid*) held it. There 3 virgates of land pay geld. There is land (enough) for 1 plough. The plough (*ipsa*) is there with 1 serf and 2 bordars. It was and is worth 6 shillings.

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IN WITETREI [ ] HUNDRED

GODEBOLD[110] holds of the earl LACH [Lack]. Leuric held it. There 1½ virgates of land pay geld. It was waste. Now it pays 16 pence.

IN CONODOVRE [CONDOVER] HUNDRED

AVENEL holds of the earl COTARDICOTE [Cothercott]. Hunnic held it. Half a hide is there. There is land (enough) for 1 plough. It is there with 2 serfs. It was waste. Now it is worth 3 shillings.

ALWARD holds of the earl HUNDESLIT [Stapleton[111]]. Ælric held it. 1 hide and ½ virgate there. There is land (enough) for 2½ ploughs. In demesne there is ½ plough. And 1 radman and 1 villein with 1 plough. It was worth 3 shillings. Now 4 (shillings).

TORET holds of the earl LANGUELEGE [Langley]. Suain held it and was free. There ½ hide pays geld. There is land (enough) for 1 plough. It is there with 4 serfs. It was and is worth 5 shillings.

SIWARD holds of the earl FRODESLEGE [Frodesley]. He himself held it and was free. There 1 hide pays geld. There is land (enough) for 4 ploughs. 3 villeins there and 3 bordars have 1 plough. Wood(land) there for fattening 100 swine, and 3 hayes (also) there. It was worth 10 shillings. Now 8 shillings.

AUTI holds of the earl LITLEGA [Lydley Heys]. He himself held it and was a free man. There 1 hide pays geld. There is land (enough) for 2 ploughs. They are there, with 2 radmans. Wood(land) there for fattening 30 swine. It was worth 10 shillings. Now 8 shillings.

The same Auti holds BOTEWDE [Leebotwood]. He himself held it and was a free man. There ½ hide pays geld. There is land (enough) for 1 plough, which is there with 2 radmans. It was and is worth 5 shillings.

SEWARD holds of the earl OVRE [Overs].[112] He himself held it. There ½ hide pays geld. 2 villeins are there with ½ plough. It was and is worth 3 shillings.

EDMUND holds of the earl SMERECOTE [Smethcott] and Eldred of him. Himself held it. There 1 hide pays geld. There is land (enough) for 3 ploughs. 2 radmans and 1 bordar are there with 1 plough. Wood(land) for fattening 50 swine. It was worth 4 shillings. Now 4 shillings.

IN RUESSET [ ] HUNDRED

ELRIC holds of the earl ETUNE [Eyton]. Siward and Uluric held it for 2 manors. 3 virgates of waste land there.

ELMUND and ALWARD his son hold of the earl ENBALDESTUNE [Amaston].[113] Elmund himself (*ipsemet*) held it and was free. There 2 hides pay geld. There is land (enough) for 3½ ploughs. 4 villeins there and 3 bordars have 1½ ploughs. It was worth 10 shillings. Now 7 shillings.

The same son of Elmund holds RUTUNE [Rowton]. Four thegns before him held it for 4 manors and were free. There 2 hides pay geld. There is land (enough) for 4 ploughs. 2 radmans are there. T.R.E. it was worth 9 shillings and now 3 shillings. They were waste and are still nearly so (*satis*).

The same holds POLE [? now Polemere] and Ordmer of him. Lemer and Elmer held it for 2 manors and were free men. Half a hide is there, and it pays geld. There is land (enough) for 1½ ploughs. In demesne there is ½ plough with 1 serf, and (there is) 1 bordar. It was worth 4 shillings. Now 2 shillings.

The same holds BENEHALE [Benthall]. Elmaer held it and was a free man. There 1 hide pays geld. There is land (enough) for 3 ploughs. 1 radman and 2 villeins and 2 bordars there with 1 plough. It was worth 13 shillings and 8 pence. Now 5 shillings.

IN WITENTREI [ ] HUNDRED

The same holds UDEVERTUNE [Wotherton]. Elmund held it and was a free man. There 3 hides pay geld. There is land (enough) for 14 ploughs. In demesne there is ½ plough and (there are) 6 villeins and 1 bordar and a priest and 4 radmans with 12 ploughs. A mill there yielding 24 small measures (*vascula*) of corn. T.R.E. it was worth 4 pounds and now a like amount.

ERTEIN holds of the earl MILDETUNE [Middleton]. Himself held it and was free. There 3 virgates of land pay geld. There is land (enough) for 1 plough. It is there in demesne

[110] See above, p. 314.

[111] See Eyton, *Shrops.* vi, 108.

[112] Entered before in less detail in the earl's demesne; see above, p. 318.

[113] Occurs as 'Amboldeston' in 1251; Eyton, *Shrops.* vii, 174.

with 2 serfs. It was worth 9 shillings. Now 12 shillings.

ELWARD holds MULETUNE [? Mellington].[114] Godric held it and was a free man. There 1 virgate of land pays geld. The land is (enough) for 1 plough. It is there in demesne with 2 serfs. It was and is worth 5 shillings.

Elward holds RISTUNE [Rhiston]. Seward held it and was a free man. There 3 hides pay geld. There is land (enough) for 4 ploughs. 1 radman there has 1 plough with 3 serfs, and (there are) 2 villeins with 1 plough. Wood(land) for fattening 30 swine. It was worth 10 shillings. Now 12 shillings.

Elward holds CIRESTOC [Churchstoke]. Siward held it and was free. There 5 hides pay geld. There is land (enough) for 7 ploughs. One Welshman there has 1 plough. Wood(land) there for fattening 100 swine. It was worth 10 shillings. Now 64 pence.

IN ODENET [HODNET] HUNDRED

EDDIET holds of the earl ROUTONE [Rowton]. Morcar and Dot held it for 2 manors and were free. There 2 hides pay geld. There is land (enough) for 4 ploughs. In demesne there is 1, and 3 serfs, and (there are) a priest and 4 bordars with 1 plough. It was worth 25 shillings. Now 15 shillings.

IN BASECHERC [BASCHURCH] HUNDRED

ANSCHITIL holds of the earl LETONE [Leaton]. Hunni held it and was a free man. There 1 hide pays geld. There is land (enough) for 2 ploughs. In demesne there is 1 and there are 2 settlers (*hospites*)[115] paying 4 shillings and 8 pence. It was worth 8 shillings. Now 10 shillings.

ELDUIN holds of the earl IAGEDONE [Yagdon].[116] Himself held it and was a free man. There ½ hide pays geld. There is land (enough) for 1 plough. There it is with 2 bordars. It was and is worth 5 shillings.

IN RECORDIN [WROCKWARDINE] HUNDRED

ULVIET holds of the earl PEVENTONE [Poynton] and TUNESTAN [ ]. Himself held (it) for 2 manors. 1½ hides there. There is land (enough) for 3 ploughs. In demesne there is 1 and 2 serfs. It was worth 11 shillings. Now 12 shillings.

RICHARD holds of the earl BROCHETONE [Brockton]. Aisil held it. There ½ hide pays geld. There is land (enough) for 1 plough. 1 free man there pays 16 pence of ferm.[116a]

IN MERSET [ ] HUNDRED

MADOC holds of the earl HAUSTUNE [ ][117] and BURTONE [? Brogyntyn].[118] Seward held it. There 2 hides pay geld. There is land (enough) for 4 ploughs. It is waste.

IN LENTEURDE [LEINTWARDINE] HUNDRED

SIWARD holds of the earl LANGUEFELLE [Cheney Longville]. He himself held it. There 1½ hides pay geld. There is land (enough) for 7 ploughs. 1 villein and 3 bordars there have 2 ploughs. It was worth 20 shillings, and afterwards was waste. Now it is worth 5 shillings.

ELDRED holds of the earl ACTUNE [Acton Scott]. Edric held it. There 3 hides pay geld. There is land (enough) for 4 ploughs. 2 villeins and 2 radmans there have 3 ploughs. One haye there. It was worth 10 shillings. Now 15 shillings.

IN MERSET [ ] HUNDRED

IWARD holds of the earl NEWETONE [ ]. Turgot held it. There ½ hide pays geld. There is land (enough) for 2 ploughs. 2 villeins and 2 bordars there have ½ plough. It was worth 7 shillings. Now 5 shillings.

IN CONDETRET [ ] HUNDRED

ALCHER holds of the earl HAURETESCOTE [Harcot]. Elward held it, and was a free man. There 1 hide pays geld. There is land (enough) for 5 ploughs. In demesne there is 1 plough and 3 serfs. And (there are) 6 bordars with 4 ploughs. It was worth 7 shillings and afterwards 5 shillings. Now 12 shillings.

IN CONODOVRE [CONDOVER] HUNDRED

EARL ROGER holds BRAME [Broome]. Turstin and Austin held it. There ½ hide pays geld. There is land (enough) for 2 ploughs. Of this land Rainald holds ½ virgate of land.

The earl himself holds NETELIE [Netley]. Elmar held it and was a free-man. There 1 hide pays geld. There is land for 2 ploughs. It is and was waste. It used to be worth 12 shillings.

IN BASECHERC [BASCHURCH] HUNDRED

The earl himself holds FINEMER [Fennymere]. Seward held it, and was a free man. There

[114] But see Eyton, *Shrops.* xi, 79.

[115] See above, p. 340.

[116] Near Rosshall, 3 miles north-west of Shrewsbury.

[116a] Duplicate entry. See above, p. 331.

[117] Possibly part of Halston.

[118] Eyton suggests Brogyntyn, but on very insufficient evidence, the descent given being largely hypothetical; *Shrops.* xi, 44.

½ hide pays geld. There is land (enough) for 1 plough. Waste it was and is.

In Lenteurde [Leintwardine] Hundred

Earl Leuric had 2 manors, Munetune [Minton] and Witecheslawe [Wittingslow]. There 4 hides pay geld. These 2 manors belong to (*jacent in*) the ferm of Earl Roger at Stratune [Church Stretton].

In Condetret [ ] Hundred

Widard has one manor Ferlau [Farlow] of 1 hide and 3 virgates of land. It belongs to (*jacet in*) Leominstre [Leominster], the king's manor in Herefordshire, and is there appraised.[119] He holds of the king.

In Merset [ ] Hundred

Earl Roger holds Wlferesforde [ ]. King Edward held it. 2 hides are there. There is land (enough) for 6 ploughs. It was and is waste. A little wood is there.

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## V. THE LAND OF OSBERN, SON OF RICHARD

In Ovret [Overs] Hundred

Osbern son of Richard holds of the earl Bureford [Burford]. His father Richard held it. There 6½ hides pay geld. There is land (enough) for 29 ploughs. Osbern has there 2 mills yielding 12 seams[120] of corn. And there (are) 6 serfs and 12 villeins and 3 radmans and 24 bordars and 7 coliberts (*coliberti*), and there is a church with 2 priests. Among them all they have 23 ploughs. Wood(land) there for fattening 100 swine, and one 'haye' is there. T.R.E. it was worth 100 shillings. Now 4 pounds.

The same Osbern holds Tedenesolle [Tetstill].[121] Saward held it and was a free man. There 1 hide pays geld. There is land (enough) for 3½ ploughs. In demesne there is 1 plough and 3 serfs. And there are 3 bordars with ½ plough. Wood(land) for fattening 40 swine. T.R.E. it was worth 6 shillings. Now 10 shillings.

In Culvestan [ ] Hundred

The same Osbern holds Esseford [Ashford Carbonell]. Ledi held it. There 2 hides pay geld. There is land (enough) for 4 ploughs. One French-born (man) there and 4 villeins have 2 ploughs. A mill is there yielding (*de*) 3 seams of corn. T.R.E. it was worth 16 shillings. Now 8 shillings. He found it waste.

In Lenteurd [Leintwardine] Hundred

The same O[sbern] holds Humet [ ].[122] He himself held it of King Ed[ward]. There 5 hides pay geld. There is land (enough) for 20 ploughs. Two knights there have 1 plough in demesne. And 5 villeins and 5 bordars and 1 radman (are there) with 3 ploughs. This land was and is waste, excepting the demesne, which is worth 10 shillings.

The same O[sbern] holds Stanege [Stanage]. 6 hides are there. There is land (enough) for 15 ploughs. It was and is waste. 3 'hayes' are there.

The same O[sbern] holds Cascop [Cascob] and did hold it. ½ hide is there. There is land (enough) for 2 ploughs. It was and is waste. There is a wood there and one 'haye.'

The same O[sbern] holds Achel [Ackhill]. Edric held it. 3 hides are there. There is land (enough) for 6 ploughs. It was and is waste. There is ½ league of wood.

In Condetret [ ] Hundred

The same O[sbern] holds Nene [Neen Sollars] and Siward (holds) of him. The same Siward held it, and was a free man. This manor was never assessed in hides (*hidatum*) and never paid geld.[123] The land is (enough) for 5 ploughs. In demesne there is 1, and 10 serfs, and a mill yielding a measure of corn (*modium frumenti*). T.R.E. it was worth 40 shillings. Now 18 shillings.

In Ovret [Overs] Hundred

To this manor pertains a berewick, Mulstone [Milson]. There 3½ hides pay geld. There is land enough for 6 ploughs. 3 radmans and 3 villeins there have 3 ploughs. T.R.E. it was worth 14 shillings. Now 10 shillings. He found it waste.

## VI. THE LAND OF RALF DE MORTEMER

In Ovret [Overs] Hundred

Ralf de Mortemer holds of the king Cornelie [Coreley]. Siward held it for 2 manors and was a free man. There 2 hides pay geld. There is land (enough) for 4 ploughs.

[119] *Dom. Bk.* i, 180.

[120] Seam (*summa*) = a horseload.

[121] Eyton (*Shrops.* iv, 350) produced evidence to connect this manor with the mediaeval manor of 'Tetneshulle and Maerebroc,' of which the names survive in Tetstill and Malbrook in Neen Sollars. There were, however, also a Tetneshull and Morbrook further north, under the Titterstone Clee.

[122] See Eyton, *Shrops.* xi, 343.

[123] See Introduction, p. 300.

In demesne there is 1, and 4 serfs. And (there is) 1 villein and 2 bordars and 1 radman with ½ plough. T.R.E. it was worth 48 shillings. Now 10 shillings. When he received it 3 shillings.

IN CONDETRET [ ] HUNDRED

The same Ralf holds CLAIBERIE [Cleobury Mortimer]. Eddid [124] held it. There 4 hides pay geld. There is land (enough) for 24 ploughs. In demesne there are 4 ploughs and 14 serfs. And (there are) 23 villeins and a priest and 2 radmans and 8 bordars. Among them all they have 20 ploughs. A mill there rendering 2 horse-loads of corn. Wood(land) for fattening 500 swine yields 40 shillings. T.R.E. it was worth 8 pounds, and afterwards a like amount. Now 12 pounds.

The same Ralf holds MELELA [Mawley] of 1 hide and LEL [ ] of 1 virgate and FECH [ ] of 1 virgate of land. These (estates) were 3 manors and paid geld. 3 thegns held them, and were free men. When Turstin of Wigemore received them from Earl William he linked them to the above-named manor of Cleberie [Cleobury] and (they were) then and now are valued therewith (*inibi appreciata*).[125]

In OVRET [Overs] HUNDRED there is 1 hide, DODENTONE [Earls Ditton], which also is valued therewith.

IN CONDETRET [ ] HUNDRED

The same Ralf holds LAU [The Low] and Richard (holds) of him. The church of St. Peter held it. There 1 hide pays geld. There is land (enough) for 2 ploughs. In demesne there is 1 plough, and (there are) 2 villeins, and 1 bordar with 1 plough. It was worth 5 shillings. Now 10 shillings. He found it waste.

The same Ralf holds NENE [? Neen Monell] [126] and Richard (holds) of him. Uluric held it and was a free man. There 1½ hides pay geld. There is land for 3½ ploughs. There is 1 serf, and 1 villein with ½ plough. T.R.E. it was worth 15 shillings and afterwards 3 shillings. Now in like manner 3 shillings.

The same Ralf holds NENE [Neen Savage] and Ingelrann (holds) of him. Huni held it and was free. There 4 hides pay geld. There is land (enough) for 5 ploughs. In demesne there is 1 plough and 4 serfs, and (there are) 3 villeins and 3 bordars with 1 plough. A mill is there of 2 shillings (annual value).

[124] i.e. Queen Edith.

[125] See Introduction, p. 289. 'Fech' may possibly be a confusion with a personal name, as a 'Fech' held a virgate at Baveney, which belonged to Cleobury T.R.E.; Eyton, *Shrops.* iv, 229.

[126] In Neen Savage.

The same Ralf holds STEPLE [Stepple] and Goisfrid (holds) of him. Godric held it and was free. There 1½ hides pay geld. There is land (enough) for 4 ploughs. In demesne there is 1 plough and 3 serfs and 6 bordars with 1 plough. T.R.E. it was worth 12 shillings, and afterwards and at the present 7 shillings.

The same Ralf holds CHINLETE [Kinlet] and Richard (holds) of him. Eddid [127] held it. 4 hides are there. There is land (enough) for 8 ploughs. In demesne there are 2 ploughs and 6 serfs and (there are) 8 villeins and 2 radmans and 6 bordars and 1 French-born (man) with 6 ploughs. T.R.E. it was worth 60 shillings and afterwards 30 shillings. Now 40 shillings.

IN CULVESTAN [ ] HUNDRED

The same Ralf holds SETHAM [The Sheet] and Ingelrann (holds) of him. Levenot held it with 1 berewick. There 2 hides pay geld. There is land (enough) for 4 ploughs. In demesne there are 2 ploughs and 4 oxherds, and (there are) 2 villeins with ½ plough. T.R.E. it was worth 5 shillings, and afterwards 2 shillings. Now 10 shillings.

IN LENTEURD [LEINTWARDINE] HUNDRED

The same Ralf holds LENTEURDE [Leintwardine]. King Edward held it. 4 hides and 1 virgate are there. There is land (enough) for 14 ploughs. In demesne there are 3 ploughs and 6 oxherds, and (there are) 10 villeins and 8 bordars and a reeve and 2 radmans with a priest. Among them all they have 8 ploughs. There is a church there, and a mill yielding (*de*) 6 shillings and 8 pence and 6 'sticks' of eels.[128] Of this land one knight holds 1½ hides and has there 1 plough and 5 serfs and (there are) 5 villeins and 3 bordars with 2 ploughs. Two men there pay 4 shillings for hire (*locatione*) of land. There is 1 league of wood(land). T.R.E. it was worth 40 shillings and afterwards 30 shillings. Now 4 pounds.

The same Ralf holds STANEWEI [Stanway]. Ælmar held it. There 1 hide pays geld. There is land (enough) for 3 ploughs. In demesne there are 2 ploughs and 6 serfs and a reeve with ½ plough. It was worth 10 shillings. Now 12 shillings.

The same Ralf holds ALFERTINTUNE [Adforton]. Edric held it. There 3 hides pay geld. There is land (enough) for 6 ploughs. (There are) 5 villeins and 6 bordars and 1 radman with 4 ploughs among them all. It was worth 8 shillings. Now 5 shillings.

[127] i.e. Queen Edith.

[128] A 'stick' contained 25 eels.

The same Ralf holds LINGHAM [Lingen] and Turstin [129] (holds) of him. Gunuer and Edric held it for 2 manors. There 1½ hides pay geld. There is land (enough) for 7 ploughs. In demesne there is 1, and 2 oxherds, and (there is) 1 villein and 4 bordars with 2 ploughs. Half a league of wood(land) there and 3 'hayes' for taking roe-deer (*haiae capreolis capiendis*). T.R.E. it was waste and afterwards was worth 6 shillings. Now 10 shillings.

The same Ralf holds SIRELEI [Shirley] and Turstin (holds) of him. Half a hide (is) there. Elmar held it. There is land (enough) for 1 plough. It is there with 2 serfs and 1 bordar. It was waste. Now worth 2 shillings.

The same Ralf holds LEGE [Upper and Lower Lye] [130] and one knight holds of him. Elmar held it. 1 hide is there. There is land (enough) for 2 ploughs. In demesne there is 1, and 2 oxherds, and (there are) 3 bordars with 1 plough. There are 2 'hayes' there. T.R.E. it was worth 5 shillings. Now 7 shillings. He found it waste.

The same Ralf holds TUMBELAWE [ ]. Eldred held it. 1½ hides there. There is land for 5 ploughs. It was and is waste.

The same Ralf holds LECTUNE [Letton] and Ingelrann (holds) of him. Seward held it. 1½ hides there. There is land (enough) for 6 ploughs. 6 villeins there with 1 knight have 3 ploughs. It was waste and afterwards was worth 5 shillings. Now 10 shillings.

The same Ralf holds WALIFORDE [Walford] and St. Mary of Wigemore holds of him. Alsi held it. Half a hide (is) there. There is land (enough) for 2 ploughs. In demesne there is 1, with 2 oxherds. It was worth 12 shillings. Now 8 shillings. He found it waste.

fol. 260*b*.

The same Ralf holds WALIFORD [Walford] and Ingelrann (holds) of him. Ulward and Blachemer and Dunning held it for 3 manors. 2½ hides are there. There is land (enough) for 5 ploughs. In demesne there are 2 ploughs, and 4 oxherds, and (there are) 2 villeins with 1 plough. T.R.E. it was worth 11 shillings and afterwards 12 shillings. Now 15 shillings.

The same Ralf holds BUCTONE [Buckton] and Oidelard (holds) of him. Saxi held it. 5 hides are there. There is land (enough) for 10 ploughs. In demesne there are 2, and 4 oxherds, and (there are) 2 villeins and 1 bordar with ½ plough. A mill is there of 8 shillings (annual value). T.R.E. it was worth 30 shillings and afterwards 20 shillings. Now 21 shillings.

The same Ralf holds WATREDENE [Llanvair Waterdine]. Edwi held it. 5 hides are there. There is land (enough) for 12 ploughs. It was and is waste.

The same Ralf holds BRANTUNE [Brampton Bryan] and Richard holds of him. Gunwar held it. 2½ hides are there. There is land (enough) for 6½ ploughs. In demesne there is 1½, and 3 oxherds, and (there is) 1 villein and 3 bordars. Half a league of wood(land) there. T.R.E. it was waste. Afterwards it was worth 5 shillings. Now 10 shillings.

The same Ralf holds PEDEWRDE [Pedwardine] and Richard (holds) of him. Elrie held it. 3 virgates of land are there. There is land (enough) for 2 ploughs. In demesne there is 1, and 2 oxherds and 1 bordar. It is worth 3 shillings. It was waste.

The same Ralf holds PEDEWRDE [Pedwardine] and Richard (holds) of him. Erniet held it. 1 hide is there. There is land (enough) for 2 ploughs. In demesne there is 1, and 2 oxherds and 1 bordar. T.R.E. and after as now it was worth 10 shillings.

The same Ralf holds PEDEWRDE [Pedwardine] and Richard (holds) of him. Ærgrim held it. 3 virgates of land are there. There is land (enough) for 2 ploughs. 2 villeins are there with ½ plough. T.R.E. it was waste, and afterwards as (*et*) now was worth 5 shillings.

The same Ralf holds ADELESTUNE [? Adley [131]] and Helgot (holds) of him. Rauenesuard held it. Half a hide of land (is) there. There is land (enough) for 2 ploughs. It was and is waste.

The same Ralf holds ½ virgate of land in EDELACTUNE [Adley [132]]. It is waste.

The same Ralf holds BUCHEHALLE [Bucknell] and Helgot (holds) of him. 2 hides are there. There is land (enough) for 6 ploughs. It was and is waste. 1 league of wood(land) there. Alwi held it.

### · IN CONODOVRE [CONDOVER] HUNDRED

The same Ralf holds POLELIE [Pulley]. Eddid [133] held it. There 1 hide and 1 virgate pay geld.

[129] Eyton (xi, 333) identifies the Turstin of this and the next entry with Turstin de Wigmore. See above, under 'Melela.'

[130] In Aymestrey, held of the Mortimer barony of Wigmore; *Feud. Aids*, ii, 377.

[131] See following note.

[132] In Brampton Bryan; formerly Adlake, and occurs in 1524 as 'Adlaghton': Cott. Chart. xxiv, 35.

[133] i.e. Queen Edith.

There is land (enough) for 5 ploughs. 3 radmans are there and 4 villeins and 5 bordars with 7 ploughs. T.R.E. it was worth 30 shillings, and afterwards as (*et*) now 40 shillings.

The same Ralf holds EDBALDINESHAM [Edgbold]. Eddid[134] held it. There 1 hide pays geld. There is land (enough) for 2 ploughs. 1 free man is there, who pays 8 shillings of 'ferm.' Wood(land) there for fattening 20 swine. T.R.E. it was worth 40 shillings, and afterwards it was waste.

The same Ralf holds SCENTUNE[135] [Sheinton] and Helgot (holds) of him. Azor and Elgar and Saul held it for 3 manors. There 2 hides pay geld. Wood(land) there for 100 swine, and a mill of 10 shillings. The whole is worth 20 shillings.

IN SCIROPESBERIE [SHREWSBURY] HUNDRED

The same Ralf holds MELA [Meole Brace]. Eddid[134] held it. There 3 hides pay geld. In demesne there are 3 ploughs, and 6 serfs and 4 bondwomen, and (there are) 6 villeins and 3 bordars with 3 ploughs, and 1 radman with ½ plough. To this manor pertain 9 burgesses in the city and a mill of 20 shillings (annual value). T.R.E. and afterwards it was worth 7 pounds. Now 13 pounds and 5 shillings and 6 pence.

## VII. THE LAND OF ROGER DE LACI

IN BASECHERE [BASCHURCH] HUNDRED

Roger de Lacy holds of the king CLEBERIE [Cleobury North] and Vuuard[136] (holds) of him. Saward held it and was a free man. There 2½ hides pay geld. There is land (enough) for 4 ploughs. In demesne there is 1, and 1 serf, and (there are) 4 villeins and 4 bordars with 3 ploughs. A mill is there of 4 shillings (annual value). T.R.E. it was worth 12 shillings and afterwards 7 shillings. Now 20 shillings.

The same Roger holds DODENTONE [? part of Ditton Priors][136a] which pertains to Claiberie [Cleobury] and is valued therewith (*ibi appreciata*); 1 hide there.

IN CONDETRET [ ] HUNDRED

The same Roger holds HOPTONE [Hopton Wafer] and Widard (holds) of him. Siward a free man held it. There 3 hides pay geld. There is land (enough) for 4 ploughs. In demesne there is 1 plough and 1 serf, and (there are) 1 radman and 2 villeins and 3 bordars with 1 plough. T.R.E. it was worth 10 shillings and afterwards 12 shillings. Now 9 shillings and 2 pence.

IN COLMESTANE [ ] HUNDRED

The same Roger holds STANTONE [Stanton Lacy] Siward held it and was a free man. There 20½ hides pay geld. There is land (enough) for 50 ploughs. In demesne there are 10 ploughs and 28 serfs and bondwomen together (*inter serves et ancillas*) and (there are) 67 villeins and 2 smiths and 5 bordars and 4 'cozets.' Among them all they have 23 ploughs. A church is there which has 1½ hides, and 2 priests with 2 villeins have 3 ploughs. 2 mills there of 26 shillings (annual value). St. Peter of Hereford has there 1 villein.[137] Of the land of this manor Richard holds 1½ hides, Azelin 1½ hides, Roger 1½ hides. These men have in demesne 6 ploughs, and 6 serfs, and two 'semi-villeins,' and 5 bordars and 2 'cozets,' with 1 plough and a mill of 10 shillings (annual value). Out of the same manor 4 serjeants (*servientes*) have land (enough) for 3 ploughs and 1 ferling and 10 acres of land, and they have 4 ploughs. 3 'radchenisters' are there holding land (enough) for 2½ ploughs, and have there that number (*totidem*) of ploughs. And one man, Auti, holds one member (*membrum*) of this manor, in which are 3 hides, and has there 1 plough with a 'semi-villein.' T.R.E. the whole manor was worth 24 pounds. Now 25 pounds.

The same Roger holds STOCHES [Stokesay]. Ældred held it and was a free man. There 7 hides pay geld. There is land (enough) for 14 ploughs. In demesne there were[138] 5 ploughs and 16 serfs and bondwomen together (*inter servos et ancillas*), and (there are) 20 villeins with 8 ploughs and 9 female cottars (*feminae cotariae*). A mill is there which yields 9 horse-loads (*summas*) of corn, and there is a miller and a keeper of the bees (*custos apium*). T.R.E. it was worth 10 pounds.

The same Roger holds ALLEDONE [Aldon]. Siward held it and was a free man.[139] There 2½ hides pay geld. There is land (enough) for 15 ploughs. In demesne there are 2 ploughs and 8 serfs and bondwomen together, and (there are) 24 villeins and 2 bordars and one 'cozet' with 8 ploughs among them all. A mill is there of 5 shillings (annual value). Of the land of this manor Richard holds 1 hide and Ældred one member (*membrum*) of land. 1 plough is there

[134] i.e. Queen Edith.

[135] There was apparently some doubt whether Sheinton was held in chief or of the earl, so that it is entered twice; see above, p. 329.

[136] Possibly an error for Ulward.

[136a] See Eyton, iii, 23.

[137] The church had received from Walter de Lacy a grant of a villein from each of ten vills including Stanton; Dugdale, *Mon.* i, 547.

[138] *Sic*, but 'erant' is no doubt an error.

[139] See Introduction, p. 300.

and 12 villeins and 7 bordars and 3 serfs with 3 ploughs. The church holds ½ hide and a priest has 1 plough with 1 'cozet.' The whole manor T.R.E. was worth 105 shillings. Now that which Roger holds (is worth) 8 pounds, that which the men hold 16 shillings. That which the priest holds 5 shillings.

## VIII. THE LAND OF HUGH LASNE

In Lenteurde [Leintwardine] Hundred

Hugh Lasne holds of the king Chenistetone [Knighton]. Leflet held it T.R.E. 5 hides are there. There is land (enough) for 12 ploughs. It was and is waste. A great wood there.

The same Hugh holds Nortune [Norton]. Leflet held it T.R.E. 5 hides are there. There is land (enough) for 12 ploughs. It was and is waste. A great wood there.

## IX. THE LAND OF NIGEL THE PHYSICIAN

In Lenteurde [Leintwardine] Hundred

Nigel the physician (*medicus*) holds of the king Wistanestou [Wistanstow]. Spirtes the priest held it of St. Almund and it was T.R.E. assigned for the sustenance (*victui*) of the canons.[140] 4 hides are there. There is land (enough) for 15 ploughs. 7 villeins there have 7 ploughs and 1 French-born (man) has a mill which yields 5 loads of corn. T.R.E. it was worth 30 shillings. Now 20 shillings. He found it waste.

The same Nigel holds Clev [ ]. Spirtes held it. There 1 hide pays geld. There is land (enough) for 4 ploughs. In demesne there is ½ plough and 1 serf. And (there is) 1 radman and 4 bordars with 1 plough. T.R.E. it was worth 12 shillings. Now 10 shillings. He found it waste.

# LANDS AFTERWARDS IN SHROPSHIRE ENTERED UNDER OTHER COUNTIES

## HEREFORDSHIRE

fol. 186*b*.

In Cutestornes Hundred

The same Osbern [fitzRichard] holds Lude [Ludlow ?][141] and Roger Lacy (holds) of him. Saisi held it. There are 2 hides that pay geld. In demesne there are 2 ploughs, and (there is) 1 villein and a reeve and a smith. It was worth 25 shillings. Now 30 shillings.

The same Osbern holds Ludeford [Ludford].[142] 1 hide is there, and in demesne 2 ploughs, and (there are) 5 bordars with 1 plough, and a mill of 6 shillings (annual value). It is worth 20 shillings.

## WORCESTERSHIRE

fol. 176.

In Clent Hund(red)

Earl Roger holds of the king one manor (called) Hala[143] [Halesowen]. There are 10 hides there. In the demesne are 4 ploughs, and (there are) 36 villeins and 18 bordars [and] 4 radmans and a church with 2 priests. Between (them) all they have 41½ ploughs. There are 8 serfs and 2 bondwomen there.

Of this land Roger the huntsman (*Venator*) holds 1½ hides of the earl and has there 1 plough, and (there are) 6 villeins and 5 bordars with 5 ploughs. It is worth 25 shillings. This manor was worth 24 pounds T.R.E.; now 15 pounds. Olwin held (it) and had in Wich [Droitwich] a salt-pan worth (*de*) 4 shillings and in Wirecestre [Worcester] a house worth (*de*) 12 pence.

## STAFFORDSHIRE

fol. 248.

[In Saisdone Hund(red)]

Earl Roger holds Claverlege[144] [Claverley]. There are 20 hides. Earl Algar held it. There is land for 32 ploughs. In the demesne there are 5 ploughs, and (there are) 32 villeins and 13 bordars having 23 ploughs. There is a mill worth (*de*) 5 shillings, and 12 acres of meadow. There is wood(land) 2 leagues long and half a league broad. It was worth T.R.E. 7 pounds and 10 shillings; now 10 pounds.

The same earl holds Nordlege[144] [Norley Regis]. Earl Algar held (it). There are 2

[140] See Introduction, p. 292.

[141] This identification is a possible one, but Eyton's arguments for the existence of a borough there before 1086 are not convincing.

[142] That part of Ludford parish which lies south and west of the Teme was until quite recently in Herefordshire.

[143] Annexed to Shropshire soon after Domesday, but restored to Worcestershire in modern times.

[144] See Introduction, p. 286. Claverley is now in Brimstree hundred; Norley and Alveley in that of Stottesden.

hides. There is land for 12 ploughs. In the demesne there are 3 ploughs, and 7 villeins and 2 bordars have 5 ploughs. There is a mill worth (*de*) 2 shillings. There is wood(land) 1½ leagues long and half a league broad. It was worth 8 pounds T.R.E. ; now 4 pounds.

The same earl holds ALVIDELEGE [144a] [Alveley]. Earl Algar held (it). There is 1 hide. There is land for 9 ploughs. In demesne are 2 (ploughs), and (there are) 8 villeins with a priest and 4 bordars with 6 ploughs. There are 6 acres of meadow. The wood(land) is 2 leagues long and half a league broad. It was worth 6 pounds T.R.E. ; now 100*s*.

fol. 248.

IN COLVESTAN HUND(RED)

The same earl holds HALAS [145] [Sheriff Hales] and Renaud (de Bailleul) of him. Earl Algar held (it). There are 2 hides. There is land for 15 ploughs. In the demesne are 4 ploughs and 2 serfs, and (there are) 26 villeins and 14 bordars and 1 knight having 10 ploughs. A mill worth (*de*) 3 shillings is there and 8 acres of meadow. The wood(land) is 1½ leagues long and 1 league broad. In this vill St. Evroul has 1 plough with a priest who has 2 oxen. It is worth 8 pounds.

The sheriff claims this manor for the king's ferm, and the county witnesses that Earl Edwin held (it).

fol. 248*b*.

[IN SAISDONE HUND(RED)]

HUGH de Montgumeri holds of the king WRFELD [146] [Worfield]. Earl Algar held (it). There are 30 hides. There is land for 30 ploughs. In the demesne are 4 (ploughs) and 5 serfs, and 67 villeins with a priest and 10 bordars have 25 ploughs. There are 3 mills worth (*de*) 40*s*. and a fishery worth (*de*) 15*s*. and 16 acres of meadow. The wood(land) is 3 leagues long and 1 league broad. Three Englishmen have 5 ploughs there with 18 villeins and 5 bordars. It was worth 3 pounds; now 18 pounds. Of this land 3 hides are waste.

fol. 248*b*.

IN PIREHOLLE [PIREHILL] HUND(RED)

The said R(obert de Statford) holds in CISEWORDE [147] [Cheswardine] and in CEPPECANOLE [Chipnall] 2 hides and Gilbert holds (them) of him. There is land for 6 ploughs. In the demesne are 2 ploughs, and (there are) 12 villeins and 8 bordars with 3½ ploughs. There is 1 acre of meadow there. There is wood(land) 2 leagues long and half (a league) broad. It is worth 40 shillings. Godgifu (*Godeva*) held (it) but rendered 2 shillings from Ceppecanole to the church of St. Chad.[148]

fol. 249.

IN SAISDONE [SEISDON] HUND(RET)

The same R[obert de Statford] holds 5 hides in BUBINTONE [149] [Bobbington] and Helgot (holds) of him. Wifare held (it) with sake and soke. There is land for 6 ploughs. In the demesne are 2 ploughs and 4 serfs, and (there are) 5 villeins and 3 bordars with 1 plough. There is wood(land) that affords pasture (*pastilis*) 1 league long and half (a league) broad. It is worth 40 shillings.

## WARWICKSHIRE

fol. 239.

[IN STANLEI [STONELEIGH] HUNDRED(?)]

OUTI holds of the earl (Roger of Montgomery) 3 hides in QUATONE [150] [Quatt]. There is land for 12 ploughs. In the demesne are 4, and 5 serfs, and (there are) 19 villeins and 14 bordars with 10 ploughs. There is 1 acre of meadow. The wood(land) is 2 leagues long and 1 broad ; and (there is) a mill worth (*de*) 2 shillings. It was worth 6 pounds ; now 100 shillings. The same Outi held it freely.

WALTER holds of the earl 1 hide in RAMESLEGE [150] [Romsley]. There is land for 7 ploughs. In the demesne is 1 plough and 2 serfs, and (there are) 7 villeins and 7 bordars with 3 ploughs. The wood(land) is 1 league long and half a league broad. It was worth 30 shillings ; now 40 shillings. Achi held it freely.

RALPH holds of the earl 5 hides in RIGGE [150] [Rudge]. There is land for 7 ploughs. In the demesne is 1, with 1 serf and (there are) 3 villeins and 4 bordars with 2 ploughs. It was worth 60 shillings ; now 40 shillings. Edric held it freely of Earl Leofric (*Leurico*).

The same Ralph holds of the earl in SCIPLEI [150] [Shipley] 1 hide. There is land for 3 ploughs. There are 2 villeins and there is 1 furlong of oaks in length and breadth. It is worth 5 shillings. Alsi held it freely T.R.E.

[144a] See Introduction, p. 286. Claverley is now in Brimstree hundred ; Norley and Alveley in that of Stottesden.

[145] The greater part of Sheriff Hales remained in Staffordshire until quite recently.

[146] See note 145. Worfield is in Brimstree hundred.

[147] See Introduction, p. 286.

[148] The see of Lichfield. Godeva was the Countess Godiva, widow of Earl Leofric.

[149] Whittimere, a member of this manor, afterwards held by a younger branch of the barons of Castle Holgate, became attracted to the court of Claverley, and so to Salop (Eyton, *Antiq. of Shrops.* iii, 168), but in the most recent adjustment of county boundaries was restored to Staffordshire.

[150] These four manors more probably belonged to Staffordshire in 1086 ; see Introduction, p. 286. Outi may with some confidence be identified with the Auti who held Botewde (? Leebotwood) and Litlega [Lydley Heys] in Condover hundred, both in 1066 and in 1086.

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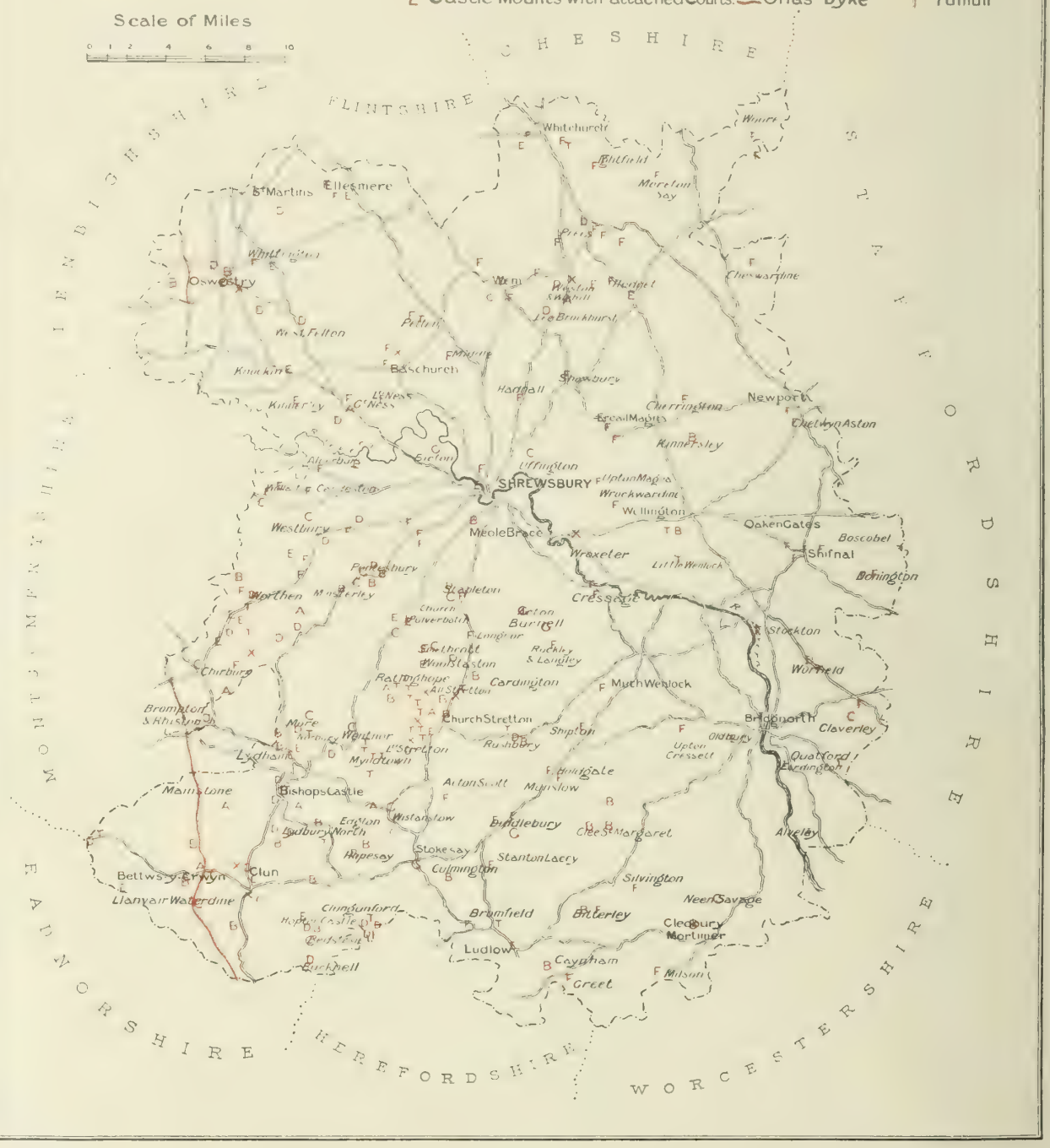
# MAP
showing
# EARTHWORKS
of
# SHROPSHIRE

Scale of Miles

0 1 2 4 6 8 10

## Reference

A Promontory Fortresses
B Hill Forts, etc.
C Rectangular Camps, etc.
D Castle Mounts
E Castle Mounts with attached Courts
F Homestead Moats
C Manorial Strongholds
H Ancient Village Sites (no example)
X Unclassified Earthworks
—Offa's Dyke
T Tumuli



# ANCIENT EARTHWORKS

Shropshire lies in the basin of the River Severn and on the Welsh border ; much of the land is hilly, and in places rises to 1,000 ft. above the sea level, and in high ranges of hills to 1,800 ft. Occupying a border-land, the ancient inhabitants for many centuries had to contend for the inviolability of their territory. The great hill forts, the strongholds of the primitive tribes, with the arrangement of their positions so as to be in touch one with another, are the most interesting among the earthworks of the county.

The final stand of Caractacus against Ostorius Scapula is by many supposed to have taken place in this neighbourhood ; and his struggle for the freedom of the Britons is forcibly brought to mind by the recurrence of the name 'Caer Caradoc' by which two of the hill forts are known.[1] It is perhaps worthy of note that there are numerous small inclosures situated on points overlooking the valleys, but whether with the present state of our knowledge of the subject they may be said to indicate any general system of defence, it would be idle to speculate.

There are numerous indications of the remains of the Roman occupation of Britain in the county, which may be seen in their high roads rather than in extant camps. The most important evidence of this occupation is the site of the station Viriconium, an account of the remains of which will be found in the article in this volume upon the Roman Remains of the county.

The eighth century saw the inclusion of the greater part of this county in the Saxon kingdom of Mercia, and a memorial of vengeful anger in those tribes dispossessed of their lands and driven to the fastness of the Cambrian Hills, is seen in the great lines of dykes under the names of Wat and Offa, and in the linear entrenchments crossing the spurs of the hills of the Long-mynd, all of them with the fosse towards the west, whence we may conclude that the approach of the foe was anticipated from Wales.

The extraordinary number of later earthworks of the mount type, which cluster so thickly along the western border, whilst the eastern side is almost bare of such work, tells the same story of the irrepressible Britons desiring to reconquer their former patrimony.

Protective moats of a period when less violent warfare was waged are scattered generally over the county ; but these are more especially noticeable in the eastern part, towards the Midlands, where homesteads were further removed from the turbulent border.

[1] The exact location of the final effort of Caractacus is absolutely unknown, and the names of the hill forts are of very uncertain antiquity.

These various earthworks are here classified by their forms in the order suggested by the Congress of Archaeological Societies, by which a systematic marshalling of extant works is obtained.

A.—Fortresses partly inaccessible, by reason of precipices, cliffs, or water, additionally defended by artificial works, usually known as promontory fortresses.

B.—Fortresses on hill-tops with artificial defences, *following the natural line of the hill;* or, though usually on high ground, less dependent on natural slopes for protection.

C.—Rectangular or other simple inclosures, including forts and towns of the Romano-British period.

D.—Forts consisting only of a mount with encircling ditch or fosse.

E.—Fortified mounts, either artificial or partly natural, with traces of an attached court or bailey, or of two or more such courts.

F.—Homestead moats, such as abound in some lowland districts, consisting of simple inclosures formed into artificial islands by water moats.

G.—Inclosures, mostly rectangular, partaking of the form of F, but protected by stronger defensive works, ramparted and fosed, and in some instances provided with outworks.

H.—Ancient Village sites protected by walls, ramparts or fosses.

X.—Defensive works which fall under none of these headings.

Promontory forts, class A, are represented by ten examples, of which the most characteristic are—Weston: 'Bury Walls,' and Chirbury: 'Caerbre.' The former has the most stupendous defences, but the latter has the more intricate. Mainstone: 'The Knuck,' is representative of this type but is very small. The great similarity between those at Church Stretton, Bodbury Ring, and the camp in Ratlinghope parish is noteworthy; and while the 'Vron,' Clun, is altogether surrounded by entrenchments, its position brings it within this class.

The Hill Forts of Class B (1) eighteen in number, exhibit some very typical examples as being governed by the formation of the hill, Hopesay 'Barrow' is most pronounced; those at Wellington, on the Wrekin; and Pontesbury, on Pontesford Hill, are great double fortresses; and Church Stretton: 'Caer Caradoc' shows how the natural outcrops of rock were utilized to support the artificial works. Among the most regular in outline is that which is known as 'Old Oswestry,' where a quadruple circumvallation is increased to six at one side, with one vallum circling around and containing other earthen walls as a barrier to an enemy gaining access to the ditches. A feature observable in both divisions of this class is the out-turning of a vallum on one side of an entrance opposed to an inturned vallum on the opposite side, as at Lydbury North: 'Bury Ditches.' Quite small fortified summits which are included in this class are found at Worthen, Minsterley, and Hopton Castle: 'Worfield Bank,' the last being the most diminutive.

Of the fifteen camps of the second division of Class B the two finest examples are Worfield: 'Chesterton Walls,' and Culmington: 'Norton Camp.' Some of the works in this class are very small but in lofty positions, so that they may perhaps be considered as protected signalling stations, and a study of their positions overlooking valleys and passes, whose depths are hidden from the observation of the great camps, will reveal their use for communicating with the fortified heights.

Among the eighteen examples of class C are few of any great size, Kinnersley: 'Kinnersley Wall' is by far the largest. Those of circular plan are small; among the four quadrangular camps that in Neen Savage parish is the best type though sadly mutilated.

The mounts of class D, thirty-four in number, are clustered along the western side of the county to protect the border lands, especially in the south-west; in the eastern half they are almost absent, four only being placed in that direction. Many of these mounts are erroneously marked as Tumuli in the Ordnance Survey.

Thirty-three of Class E remain, that which formerly stood at Chirbury is now marked by a slight platform and is relegated to Class X. As with Class D nearly all the mounts with baileys lie in the western part of the county. The most typical is 'Cause Castle' in the parish of Westbury, where a hill-top court is added to the works; and others, though small, are in the parishes of Holdgate and Church Pulverbatch: 'Castle Pulverbatch;' two others at More, and Church Pulverbatch: 'Wilderley Hall' have double quadrangular courts in a line with the mount which stands almost severed from them; these baileys appear to be later additions. At Church Stretton: 'Brockhurst Castle' the mount and bailey are of almost the same area, with no great difference in their elevation. The most curious, and one of the strongest, is Clun Castle, where deep ditches separate the two elevated courts and the mount. At Whittington the original works are confused by extensive later additions of moats. In Chirbury, at Hockleton, and Smethcott, are two very small mounts and curiously small baileys, in the former case the court covers a smaller area than the base of the mount.

Of Classes F and G there are seventy-eight examples, and those are not characteristic.

Class H is not represented in the county.

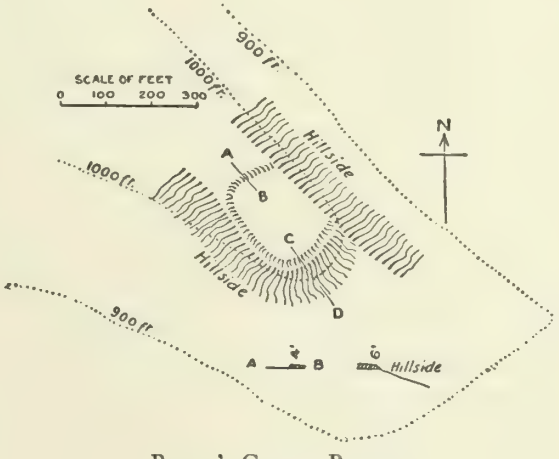
In Class X the works are various, but the only one calling for attention is Offa's Dyke, a stupendous work extending through all the western projections of the county.

These Classes are supplemented by a list of Tumuli, they are not numerous, and those extant are in the neighbourhood of the Longmynd. Those marked on the Ordnance Maps would extend the list, but they are wrongly called Tumuli, the name being given in many cases to works which are of the mount type of fortress, as already stated.

The works are tabulated by the alphabetical arrangement of parishes; and all the measurements of scarp and fosse are perpendicular.

## PROMONTORY FORTRESSES

### [Class A]




Bishop's Castle, Reilth

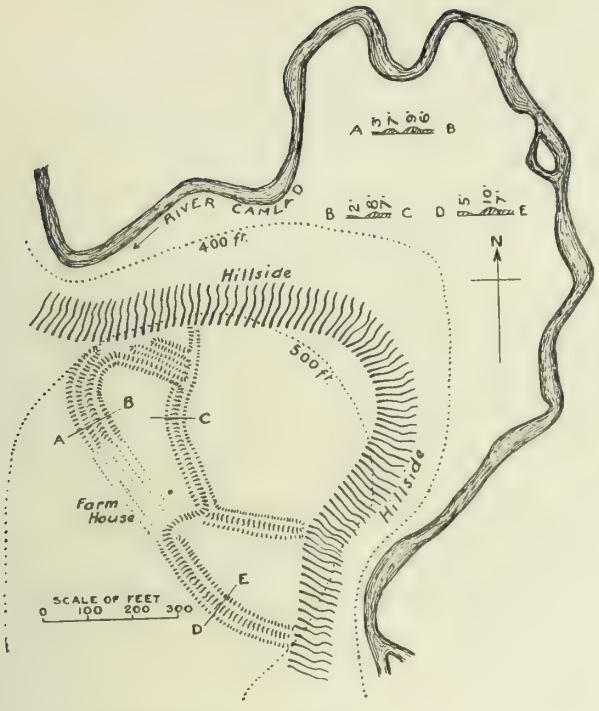
Bishop's Castle.—At Reilth, 4 miles north-north-west from Clun, 200 ft. above the River Unk is a small promontory jutting towards the south-east from a range of hills stretching for many miles in a westerly direction, through the district known as the Clun Forest. Upon this point of rock are faint traces of a camp of great age, consisting of a scarp,

4 ft. in height on the north-west increasing to 6 ft. on the south-east, this surrounds three sides of the stronghold, the fourth side—on the north-east—is so steep as to need no artificial defence. The neck of land on the north-west of the camp is 130 ft. wide. The work is situated one mile to the east of Offa's Dyke.

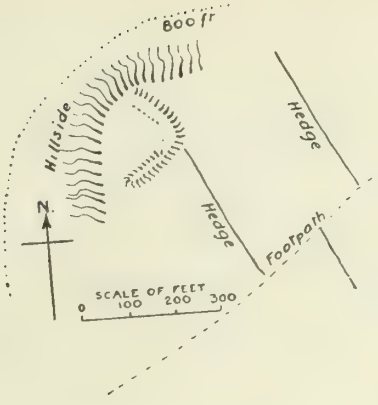
Chirbury.—Caerbre, 1¾ miles south by east from Chirbury, is the most representative promontory camp in the county. The promontory is 140 ft. above the River Camlad and is situated within a bend of its course. The point of the projecting land is cut off by double entrenchments of more elaborate design than is ordinarily the case with this class. The inner line of defence is a vallum approximating in plan to the half of a hexagon, this rises from the interior 1 ft. only, but it has a scarp of 8 ft. into a fosse 2 ft. deep outside the greater part of its length. At its northern extremity, however, the fosse ceases, and two aggers project almost at right-angles from the vallum and extend to the edge of the hill. Parallel to these aggers a vallum branching from the same source curves round by the edge of the cliff and takes a fairly straight course to the opposite edge of the hill on the south-east; this rises 3 ft. from the interior with a scarp of 9 ft. to 10 ft. Beginning at the northern curve a second vallum—parallel to the first—has evidently extended half the length of the first; this provides a counterscarp to the first of 7 ft. with an outer scarp of 3 ft. The area thus inclosed between the inner and outer defences is divided by the innermost vallum branching from the southern angle of the semi-hexagon to the outer vallum where, bending round, it continues to the south-eastern cliff. This southern part of the outer line consists of a vallum 10 ft. high and a fosse 5 ft. deep. North of this dividing traverse a farm-house has been built and consequently the works are almost obliterated at this point; but it appears that an entrance to the northern outer area was between the double vallum and fosse on the one side and the fosse and traverse on the other; whilst at the northern extremity an entrance to the innermost refuge was probably between the outer vallum and the verge of the hill, which may account for the elaborate defences at this point.

Church Stretton: Bodbury Ring.—On Bodbury Hill, 1 mile north-west from Church Stretton, a promontory of the Longmynd, 500 ft. above the pass called 'Motts Road,' and pointing to the south-west, is a small but well situated camp. The hill is precipitous around all but the northern side which recedes with a gentle slope, and across this neck of land stretches a strong entrenchment of vallum and fosse. The broad vallum provides a breastwork 5 ft. high, and with an escarpment of 14 ft. to 20 ft. in height, it descends somewhat abruptly into a wide and flat-bottomed fosse 3 ft. deep. Where the fosse touches the verge of the hill at its two extremities the base of it becomes a narrow path which has been continuous around the headland; this is now undiscernible in parts, but in other places it is 2 ft. wide. The crest of the promontory—some 12 ft. or 14 ft. above the path—is slightly flattened. The entrance, quite simple in character, passes through the heavy entrenchment on the north towards its eastern side.

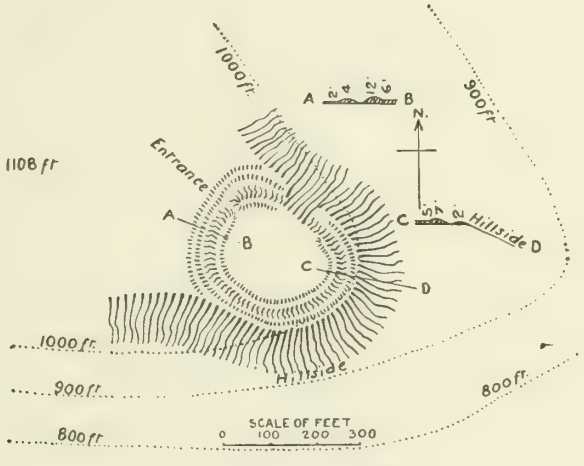
Clun.—The Vron, above Newcastle, 3¼ miles west-north-west from Clun, stands upon the extreme point of the range of hills known as Clun Forest. This headland precipitously rises 400 ft. above the Folly Brook on



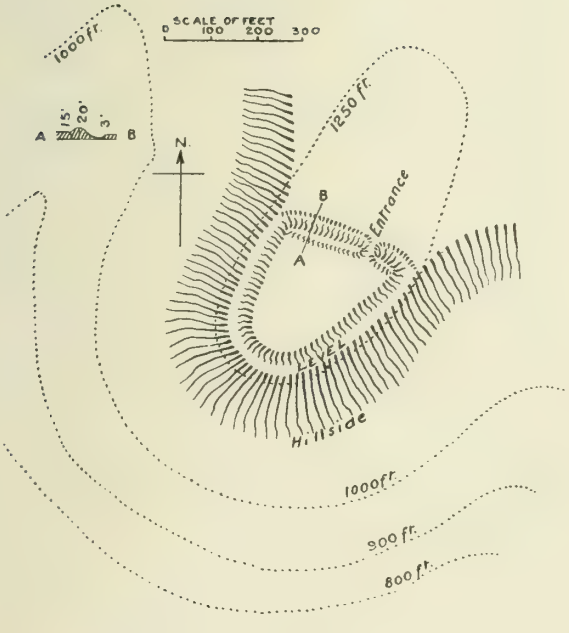

CAERBRE, CALCOT, CHIRBURY



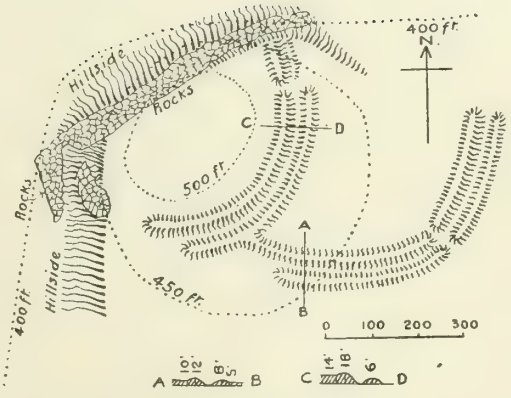

CASTLE RING, EDGTON




THE VRON, CLUN




BODBURY RING, CHURCH STRETTON

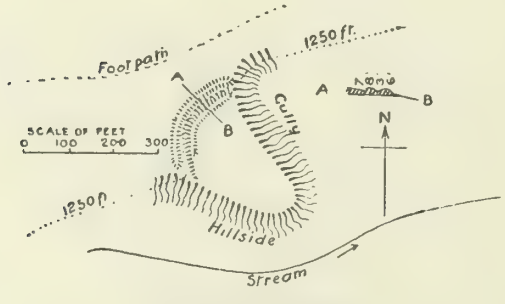



OLIVER'S POINT, GREAT NESS

the west and the River Clun on the south, it is also considerably higher than the ridge connecting it with the chain of hill on which the camp called Caer-Din Ring is situated 2 miles distant in a northerly direction. It is a strong little camp, circular in plan on a strong position. The vallum rises 6 ft. above the convex interior with an escarpment of 7 ft. towards the inaccessible hill-side, and 12 ft. on the western side facing the ridge ; the fosse is here 4 ft. deep with a revetment of 2 ft. At the north-east the entrenchment is not continuous for the pinnacle of the hill rises so sharply above it that no artificial addition was needed at this point. The fact that the entrenchments surround this position does not justify its exclusion from this class. Its size and position lead to the conclusion that the Vron was a signalling station.

Edgton.—Castle Ring, south of Horderley and 3 miles north-west from Craven Arms. The north-west angle of a high part of a ridge, very steeply sloping to the west, is cut off from the hill by an angular vallum. The ground is cultivated and the plough has reduced the former strength of this little promontory fort ; but the part of the vallum remaining is about 8 ft. high and 6 ft. wide at the top, the traces of the fosse are, however, very faint. The entrance has been at the south, between the termination of the vallum and the edge of the hill.

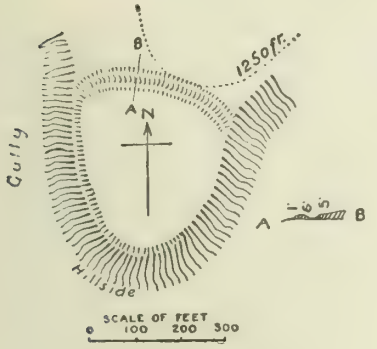
Great Ness.—Oliver's Point, 8 miles north-west from Shrewsbury. The highest point of one of a short range of rocky hills, 250 ft. above the surrounding level, except on the north-east, has the north-western corner cut off from the other part by a double vallum and fosse. The outer crest is a fairly straight line of rock and the entrenchments, taking a semicircular curve and finding support at the south-west on an outcrop of rock, inclose the summit of a steep slope. The inner vallum rises 4 ft. and has an escarpment 18 ft. high, the outer vallum is 6 ft. in height leaving the intermediate fosse of the same depth. An entrance is within 120 ft. of the northern end, and on the south-west a space between the double vallum and the outcrop may possibly have provided an exit, but in its present state this portion appears to have been destroyed. From the south-east of these works another double vallum and fosse curve northwards inclosing another area of similar dimensions to the first. The inner vallum of this second work joins the outer vallum of the first work ; but the outer vallum starts 150 ft. from the junction of the inner. The latter rises 2 ft. from the interior and has a scarp 12 ft. high with a counterscarp of 8 ft. and an outer scarp of 3 ft. The present termination of the outer lines of defence on the north leaves the garrison open to assault from the north-east, the easiest path for a raiding party, being the point of continuation of the high land ; but it is probable that the entrenchments originally continued to the northern margin of the hill, then there would be an adequate reason for the narrow entrance through this outer line that remains at the south-east.



The Knuck, Mainstone

Mainstone.—The Knuck, 4¼ miles north-west from Clun. This work cuts off a point of sloping ground but is itself

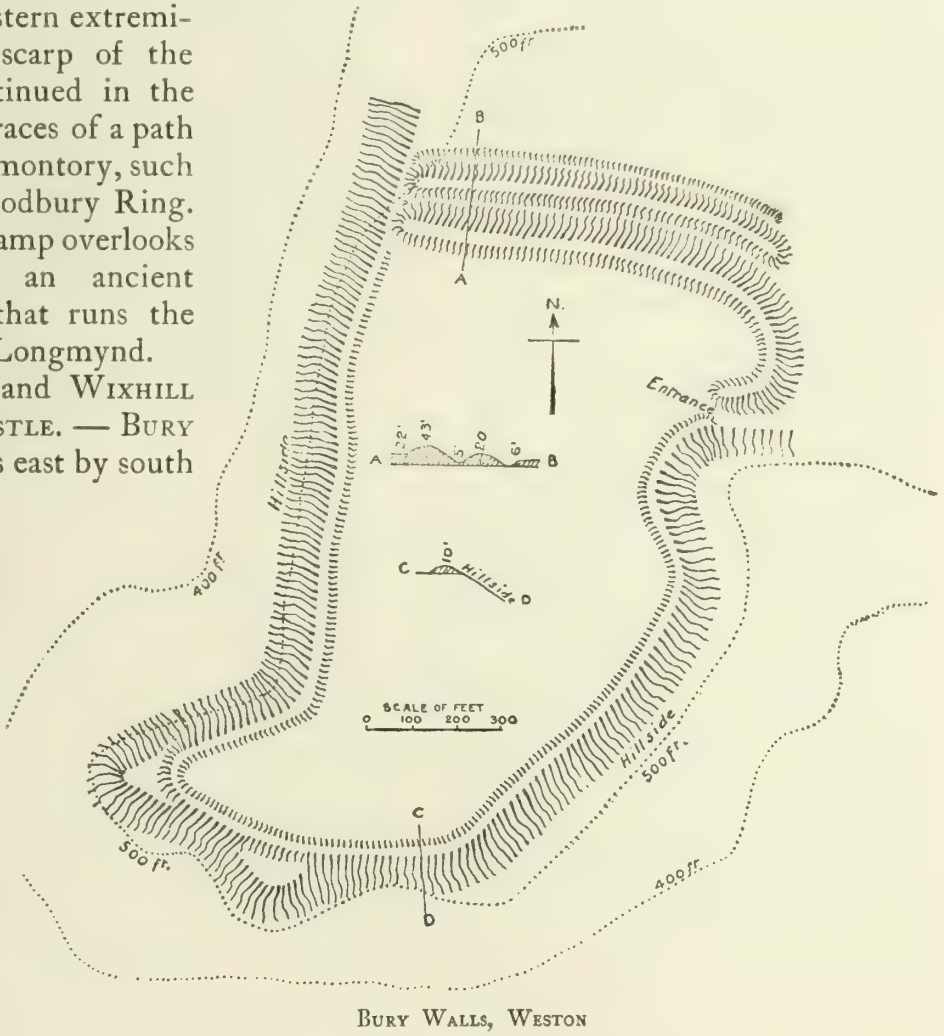
exposed to the command of the higher land immediately outside the entrenchments. The point stands from 100 ft. to 150 ft. above the marsh land about the stream on the south, and has a steep fall of 50 ft. on the east. It is but a small area that is divided from the main high land by a double vallum and fosse which are now of no great strength. The inner line rises 1 ft. and has an escarpment 5 ft. high, a fosse 3 ft. deep, and an outer scarp of 6 ft.



RATLINGHOPE CAMP

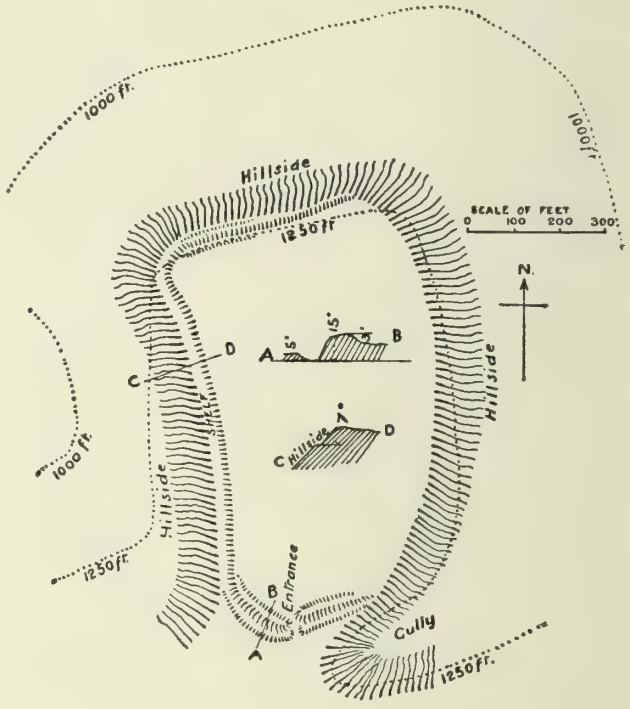
RATLINGHOPE.—A promontory which protrudes from a ridge north of the village, 3½ miles north-west from Church Stretton, is surrounded by a steep descent on all sides but the north, where the ground rises above and dominates the camp on the point. On the west is the steep hollow called Swinbatch, and on the east is the valley of the East Onny River, here called Darnford Brook. Across the north of the tongue of rock a vallum and fosse make an arc, the exterior fosse is 5 ft. deep while from its base rises a steep escarpment 6 ft. in height. The rampart is but low, and the interior of the camp slopes downwards towards the point, where there is a levelled space 80 ft. in diameter. The fosse is merged into the steep slopes at its western and eastern extremities, but the scarp of the vallum is continued in the hillside, with traces of a path around the promontory, such as is seen in Bodbury Ring. Ratlinghope Camp overlooks the Portway, an ancient British track that runs the length of the Longmynd.

WESTON and WIXHILL under REDCASTLE. — BURY WALLS, 4 miles east by south from Wem. This formidable stronghold is formed out of a tongue of land jutting from high ground on the north in a south-westerly direction. The promontory, which attains a height of 250 ft. above



BURY WALLS, WESTON

the valley, and in plan is of an indescribable shape, is surrounded by a vallum 10 ft. in height constructed on the edge of the hill, the slope of which is continuous with the escarpment. An exception is to be found at the south-west where, instead of following the line of two projections of the hill, the vallum takes one continuous curve, leaving those two projections as external platforms, these, however, offer no temptation to an enemy who would have the almost inaccessible hill-side to scale before gaining a foothold upon them. The entrenchments cutting off the promontory on the north are a double vallum and double fosse. The first vallum rises from the interior 21 ft. high and has an escarpment 38 ft. in height. The fosse is 5 ft. deep and the second vallum of 20 ft. has a counterscarp of 6 ft. The outer vallum and fosse are nearly straight and end at the north-east after a course of 880 ft.; the inner vallum, however, continues in a curve around the north-east angle to the margin of the hill, where it curves inwards 120 ft., leaving an entrance path between its base and the edge of the hill which then passes the end of the eastern vallum here curving outwards on the crest of the hill-top.



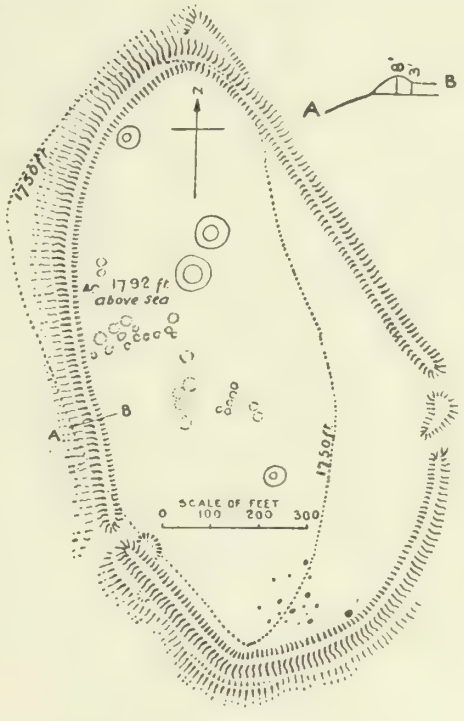

OAKHILL CASTLE RING, WORTHEN

WORTHEN.—OAK HILL CASTLE RING, 7 miles north-west of Church Stretton. On a northern promontory projecting from the north-west of the 'Stiperstones' — described as outstanding fragments of a thick band of silicious sandstone—750 ft. above the surface of the country, stands a stronghold, simply contrived in an impregnable position. Across the isthmus of rock, just within the narrowest part 260 ft. wide, is a vallum with fosse, the latter 5 ft. deep, from which rises the vallum 15 ft. in height, with a rampart of 3 ft. The entrance passes through the work, which is so planned that the two aggers approach each other at an angle, the south-west projecting slightly beyond the other, and the end of that at the south-east confronting the side of the first. The path is obliquely directed towards the precipice on the east of the exterior, thus, to pass into the camp an invader must face the defenders with the perils of the steep hillside at his back. The western edge of the promontory has a scarp of 7 ft. above a narrow path on the side of the hill, this slight artificial defence is, however, of a stronger character on a portion of the north side, where a rampart remains above and a fosse is constructed on the terraced path below. Possibly the rampart cinctured the whole camp, but very little of it is extant, and the steep hill-side alone remains an effectual defence of the whole eastern side.

## HILL FORTS WITH DEFENCES FOLLOWING THE NATURAL LINE OF THE HILL

### [Class B (1)]

Abdon, Cleobury North, and Ditton Priors.—Abdon Burf, 8½ miles north-east from Ludlow. The northern of the two rocky summits of the Brown Clee Hill, about 1,200 ft. above the Clee Brook, is crowned by a large fort. An irregular oval in plan, it covers an area 1,317 ft. by 660 ft., and is surrounded by a vallum of the dhu-stone of the hill, which, although now covered by earth in various places is generally left bare. The rampart rises from the interior from 3 ft. to 9 ft., and externally is merged into the natural scarp of the hill-side which precipitously falls from 300 ft. to 800 ft. all round except on the southern ridge which connects this summit with the Clee Burf. On the south-west is a portion of a fosse, which apparently continued across the ridge in the original design, and possibly around a far larger portion of the vallum. The entrance on the west was gained from the ridge of the hill; and here a small circular hollow within the fosse, with one of larger dimensions on the interior of the vallum, remains as part of the original defence. On the north, a considerable distance below the rampart, is an angular hollow, providing a stage in the very steep drop of 60 ft. from the vallum to the slope of the hill. The double entrance on the east appears to be modern, to which point a roadway has been made for the purpose of carting away the stone.




Abdon Burf, Brown Clee Hill

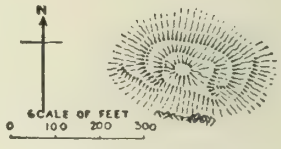
This stronghold, already greatly disturbed, will soon be more or less demolished, as a track is being made up the hill-side to convey a supply of stone from the fort for the construction of a local railway.

Within and without the fortification are a number of hollows, a few of which, judging by the encircling stones, are possibly hut circles, but others are probably the remains of workings for coal. Mr. Hartshorne[2] considers the circles to be of a religious character, and Mr. Forrest[3] believes the site to be a neolithic fortified dwelling-place; if the latter were correct the whole of the Brown Clee Hill would have been inhabited, for the hollows continue, and increase in number, towards the Clee Burf to the south. A prostrate stone inside the camp (called the Giant's Shaft) 8 ft. in length, is supposed to be an overthrown menhir.

[2] *Salopia Antiqua.*

[3] *Trans. Caradoc and Severn Valley Field Club*, iv, No. 2.

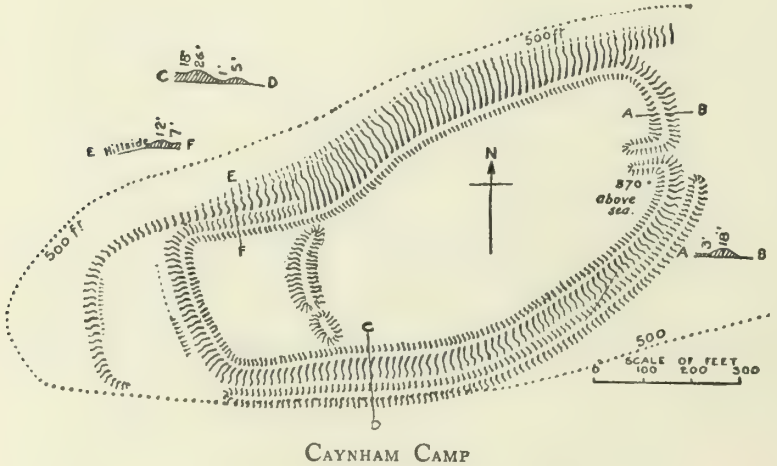
All Stretton.—Castle Hill, 1½ miles north by east from Church Stretton, is an isolated hill 200 ft. above a stream ; the rounded summit has been fortified by a double line of scarps, which, however, are so greatly mutilated that it is impossible to form a definite estimate of its original earthworks. Ten feet below the summit the hill is almost encircled by a narrow terrace from which the rampart has gone, except a fragment at the west ; this bench projects in a point at the south-east, but is lost on the south. The second scarp is also 10 ft. on the east, but is not much more than half that height on the west, where again are traces of a revetment. The base of this second scarp assumes a decidedly oval plan, governed by the sides of the hill. Traces of another scarp at a lower line appear on the south-west and the east. Due south the escarpment of the hill is continuous from the summit to the base ; but it is quite possible that pre-existing works have been obliterated by the quarrying to which it has been subjected. A comparatively flat space on the east has been supposed to represent the bailey of an earthwork of Class E ; but it seems improbable that this work was of that type of fortification.



Castle Hill, All Stretton

Cardington.—Lawley Hill, 4 miles north-east from Church Stretton, is a narrow ridge with steep sides and a succession of summits ; upon one of the latter—by no means the highest—towards the north of the ridge is a camp of curious plan which may be likened to an hour-glass, pinched in the middle though not so acutely as the time-keeper. This shape is governed by the formation of the hill-top, and the area utilized for defence is but 75 ft. at its widest, and 36 ft. at the waist, with a length of 300 ft. The two narrow ends were defended each by a vallum and fosse, but they are now so sheep-worn that 3 ft. is the highest point in the vallum rising from a 6-in. fosse. From the fosse at each end a bench, or path, may be traced along both sides some 10 ft. below the summit.

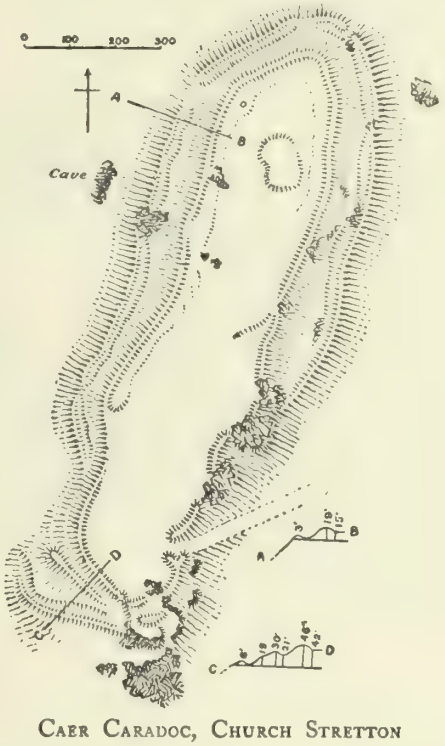
Caynham.—Caynham Camp, 2 miles south-east from Ludlow, is upon a hill some 250 ft. above the surrounding land. On the north, where the hill is precipitous, a rampart is the only artificial defence, and that is badly mutilated. On the south the camp is more easily accessible and here a double vallum and ditch extend the whole length, though in parts the rampart has all but perished. The entrance on the east is between the valla, incurved 90 ft. ; outside which is a natural plateau from which at the south-east a sunken way leads to lower ground. The interior area is convex, rising high above the defences ; and across the western part of the



Caynham Camp

camp extends a traverse, 4 ft. high on the east side and 15 ft. on the west. The latter end of the interior is at a lower level and receives additional strength from a breast-work 5 ft. in height which formerly descended 12 ft. into a ditch. The short western end has a vallum 8 ft. high and a scarp of 14 ft. into a shallow fosse which is almost obliterated. Outside this end is another small area which still retains slight traces of a vallum. On the northern hill-side, a considerable distance below the camp, are vestiges which were probably outworks. Two streams flow at the base of the hill, surrounding it on the north, west, and south sides.

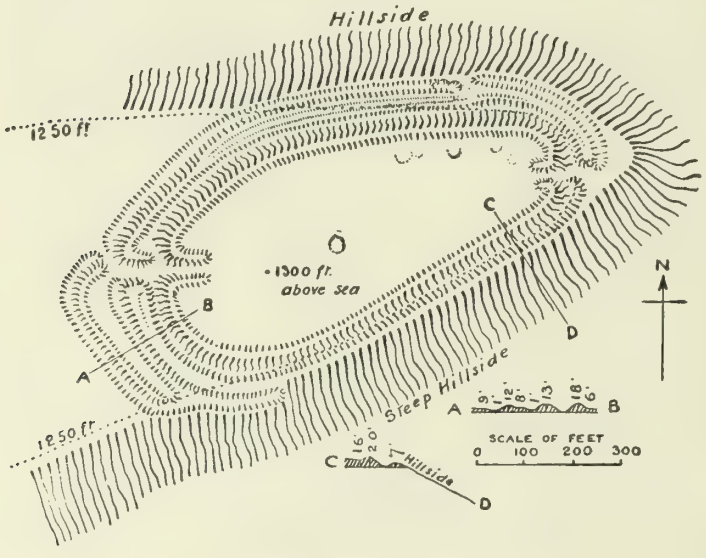
CHURCH STRETTON.—CAER CARADOC, $1\frac{3}{4}$ miles north-east of Church Stretton, is situated on the highest summit of a rocky ridge known as Caradoc Hill, over 900 ft. above the valley. The camp, an elongated and irregular oval, has a double line of defence inclosing an area 1,410 ft. long and 450 ft. at its greatest width, or about 6 acres. The hill falls away from the entrenchments at a steep angle all around, especially at the western and eastern sides, where it is precipitous. A feature in this camp is the outcrops of rock which continually occur, and which have been utilized to support the lengths of vallum constructed between them ; while another characteristic is the sunken way, excavated three parts around the convex summit, and immediately within the upper vallum ; the latter rises 6 ft. in height in the middle of the east side, and at the north-east attains a height of over 12 ft. above the hollowed path within. The excavated path ends at one-third the length of the camp from the south, but the vallum continues around the south-west in a curve until it meets a flat rock at the south ; at this junction is a small gap in the rampart with a mound in the middle, providing a footway to the outer defences. The flat rock with the remains of two aggers upon it is a strong point, commanding the outworks on one side and the hill-side on the other. A short length of vallum turning in a northerly direction from the flat rock divides into two small branches at the entrance from a roadway which traverses the eastern side of the hill. For the defence of this entrance another portion of the vallum curves within the crutch-like end of the former, and together they effectually cover the means of ingress. The northern two-thirds of the camp are surrounded by an outer vallum, within which a similar path for the defenders is excavated. Supported at the south-eastern extremity, this entrenchment takes its course some 50 ft. lower than the upper line ; at the north-east it is broken, and in the north is an opening which apparently served for egress on to the ridges of the hill. A gap in the north-west is evidently a mutilation, and along the western side, south of the outcrop of rock, the revetment is reduced in places to a mere indication of its former position. Beneath the spot where the




CAER CARADOC, CHURCH STRETTON

excavated path of the upper defence ceases—on the west towards the south—another opening occurs in the outer vallum, from which an agger 200 ft. long bends inwards towards the inner line and is lost in the hill-side ; the steepness of the declivity demanding no other defence. It has been suggested that the original termination of the camp was at this point ; but the absence of any natural support, such as an outcrop of rock adapted so freely in other parts of the circumvallation, apparently contradicts this theory, especially as such an aid to the defences occurs further south. Two natural slopes crossing the camp from this point assisted in its safeguard.

Outside the southern portion, 30 ft. below the rampart, is an agger nearly 200 ft. in length, growing from the level by the flat rock to 10 ft. high at its western extremity. Below this—which is contained within its curve—is an excavated terrace with a rampart 6ft. high, which is merged into the hill at its northern end ; access to these outworks was by the aforementioned path by the mound. South of the flat rock is a pinnacle which would be of strategical value in primitive warfare.[4] On the summit of the hill within the camp is a roughly-levelled area nearly 100 ft. by 120 ft. ; and within the upper excavated terrace—at the north-west—the hollow is widened so as to contain a hole for a reserve of water.




Caer Caradoc, Clun

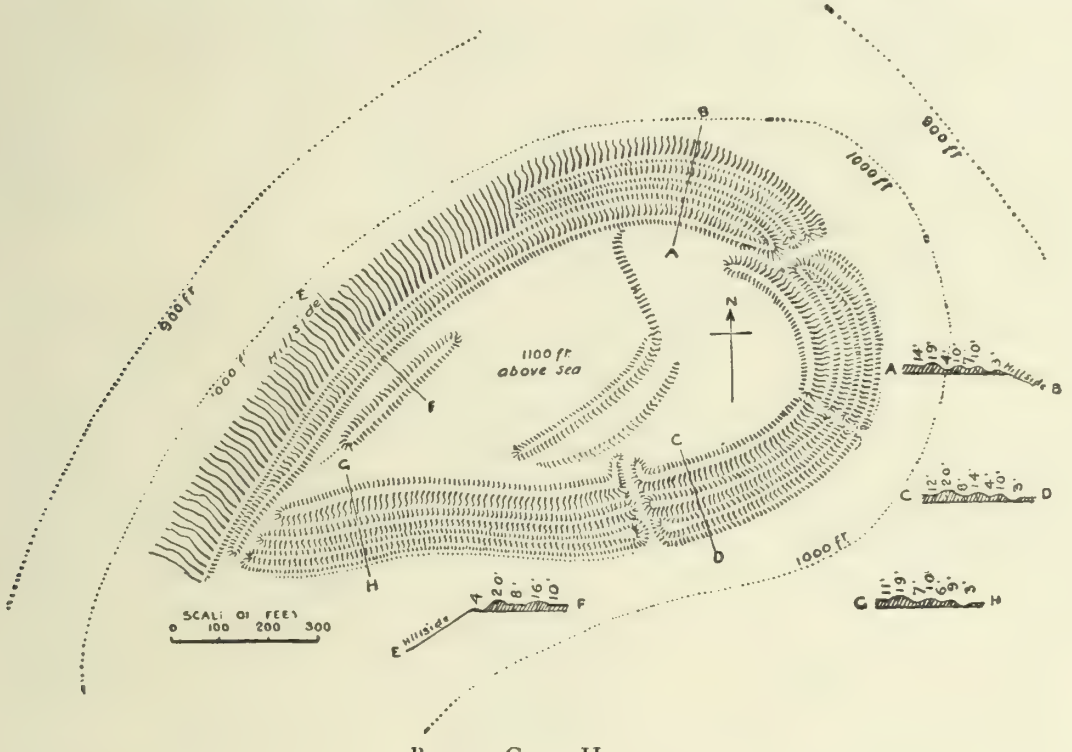
Beneath the western fortifications an artificial cave, called 'Caradoc's Cave,' is excavated in the rock; but it is of doubtful age.

Clun.—Caer Caradoc, 3 miles south by east from Clun, is upon the highest part of a steep hill projecting in an easterly direction from a range of lower altitude. It stands 670 ft. above the River Redlake which flows half a mile to the north-east. Naturally defended by the scarp of the hill, the artificial works, nevertheless, are strongly and cunningly constructed. The entrance on the west is between works of unusual design ; on the north of it a double vallum is sharply inturned and the angle of the outer one hugs a hollow which is probably the site of a shelter for a guard. On the south of the path is a triple vallum, the innermost incurved a considerable distance, the second is of great width and the top shows signs of a minor defence ; divided from this by a deep fosse the third vallum provides a wide berme with a rampart 4 ft. high which curves towards the entrance in such a manner as to command the path both within and without : a clever piece of engineering which extends to the brow of the hill where the fosse from either side unites and safeguards the southern angle. On the northern side of the camp

[4] For the details of this plan we are indebted to Mr. E. S. Cobbold's *Church Stretton*, vol. iii.

the double works become triple, another fosse being worked in the thickness of a vallum, and evidently a later addition ; where this terminates a vallum divides the end of two ditches, one of which contains two hut circles. From this point to the eastern entrance the counterscarp of the inner fosse is revetted, and widens to protect the postern which opens between the incurved aggers on to a small platform. Within the north side of the camp are five hut circles, with openings towards the rampart, which here rises over 6 ft. thus sheltering the huts from the force of the north wind. Another hollow in the middle of the camp is at present 7 ft. deep ; it appears to be a choked shaft, and possibly provided a grain store.

Hopesay.—Burrow Camp, 3 miles west of 'Craven Arms,' occupies the summit of a lofty hill 650 ft. above the Clun valley. The pear-shaped plan of the camp is governed by the natural contour of the hill, which is especially steep on the north-western curve ; here a double vallum was considered



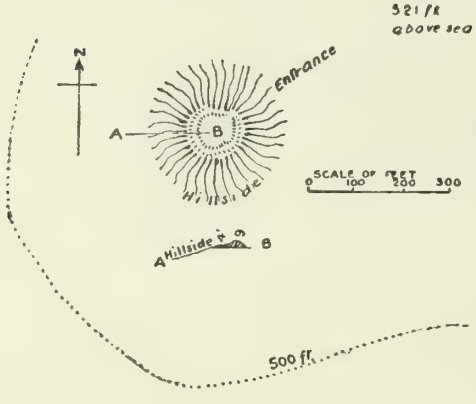

Burrow Camp, Hopesay

sufficient protection, while the other parts are surrounded by quadruple walls, although the outermost has for the greater part perished. The north-eastern entrance is curiously constructed, the two inner valla on the north side and the two middle ramparts on the south side respectively unite as they overlook the path and form an angular mound on each side, the opening between them being covered by the overlapping of the inner south vallum, making a disputed access extremely difficult. At the south-east is a postern ; that this is no modern break in the entrenchments is proven by the ends of the valla of one side overlooking the ditches of the other in a manner which the continuity of the walls would have rendered impossible. About this point the entrenchments are strongest ; the inner vallum rises 9 ft. 6 in. and falls 20 ft. into a 10 ft. fosse, the second with a scarp 12 ft. in height has a fosse 4 ft. deep, the third 10 ft. high has a counterscarp of 4 ft., and the outermost

vallum is now 3 ft. in height. Due south is another entrance ; the outer vallum here widens at the ends with angles pointing in opposite directions, the left one out-turned and the right inturned, while the outer fosse passes around the ends and joins the second fosse in one continuous ditch on each side. The inner vallum incurves, the part on the left slightly bending towards the other for the better command of the path ; within this entrance the rising summit of the hill has been scarped, by which a platform, 5 ft. and more, is provided dominating the inroad. Behind this is another ridge, partly natural and partly artificial, dividing the camp into two portions ; that portion opposite the south entrance is surrounded by a vallum which rises to 18 ft. at one point. On the verge of the steep descent of the hill at the south-west angle is another entrance, a sort of sally-port, where the southern ramparts abut on the side of the vallum defending the north-west side ; parallel to the latter is a strong agger which defends this minor entrance.

Hopesay : Wart Hill Camp.—On Wart Hill, one of the minor summits of the Caradoc Range, the apex is crowned with a camp of irregular plan, which has been defended by two lines of scarps, and in some places the artificial works rise 20 ft. above the natural slopes. Towards the north-east the ground has a less rapid decline, and here the entrenchments were evidently of a more elaborate character, possibly an involved entrance, but the works are too much mutilated definitely to distinguish their object. A spring rises on the south-western slope of the hill.

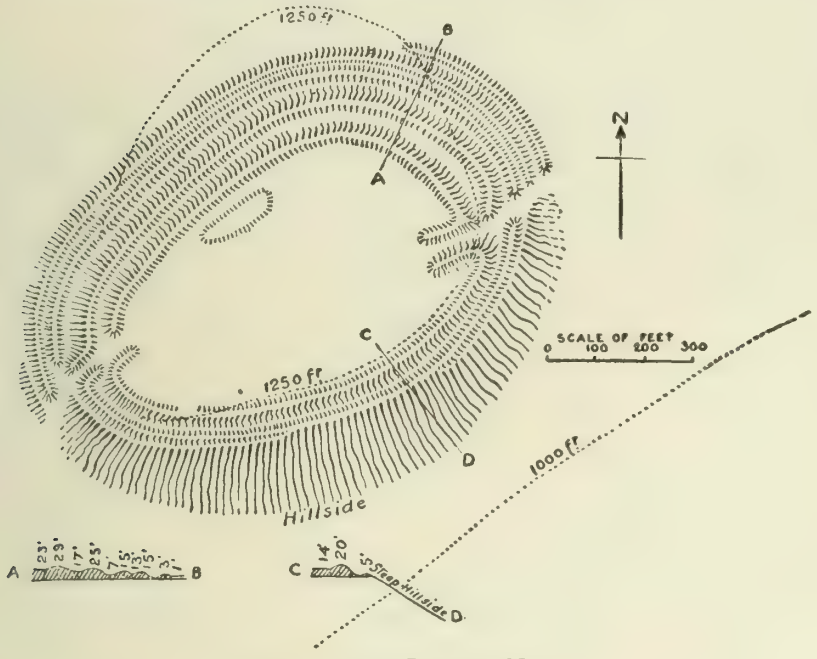
Hopton Castle.—Warfield Bank, 5 miles south-east by east from Clun, is a small fort occupying the circular summit of a conical hill, the very name by which it is known being commemorative of its former use. It is situated 120 ft. above a neighbouring stream, and is adapted to the hill. The interior area, only 80 ft. in diameter, is surrounded by a vallum 9 ft. high, and the escarpment is 5 ft. to its junction with the slope of the hill. On the north the hill-side rises to the top of the vallum, and against it, at the north-east, is the entrance.



Warfield Bank, Hopton Castle

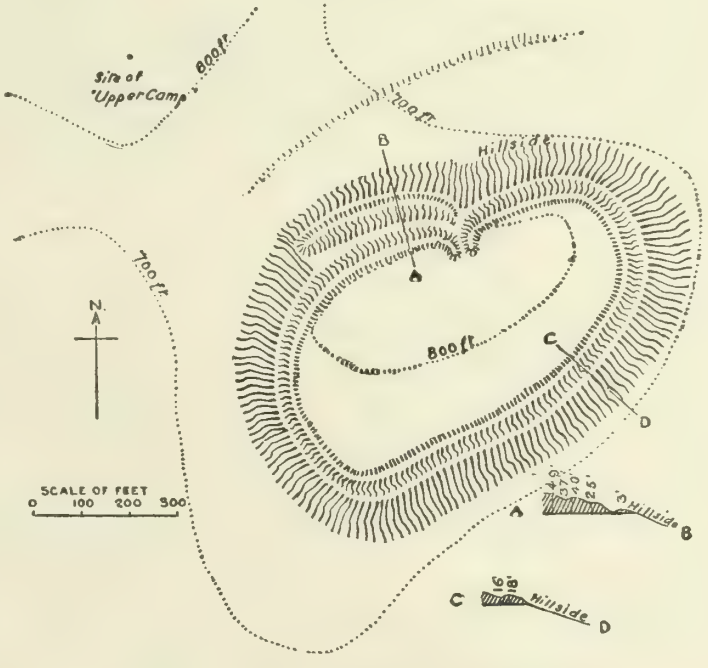
Lydbury North.—Bury Ditches, 2¼ miles north-east of Clun, lie upon the summit of a hill 280 ft. above the surrounding ground and 700 ft. above a stream flowing three parts of a mile to the north-west. The camp is elliptical with a vallum double around the southern half, becoming quadruple on the northern half. The hill-sides are steep on all sides except the north-east. The entrance at the south-west demands particular attention ; on the left side a vallum, rising 8 ft., is opposed to the hill slope on the right, and the second vallum on the left stops short by some 50 ft. leaving space for the out-curve of the third vallum, which portion runs parallel—in an oblique direction—to the incurve of the first vallum on the right hand side ; on the latter side the inner vallum curves within the embrace of the outer and in-turns to the camp, whilst opposed to it on the left side is the fourth vallum

with a straight termination. It will thus be seen that the access to the fosses is commanded in a remarkable manner, and that the value of the valla, 15 ft. and 18 ft. in height, are greatly enhanced. At the north-eastern entrance the ramparts are inturned for 100 ft. on both sides, that to the south holding two hut circles. A fifth vallum extends 460 ft. on the north side of this entrance, evidently for greater strength on this the most vulnerable point. The whole interior area rises so as to leave an almost sunken way around the interior of the rampart; at the north side is a long mound 3 ft. in height.




Bury Ditches, Lydbury North

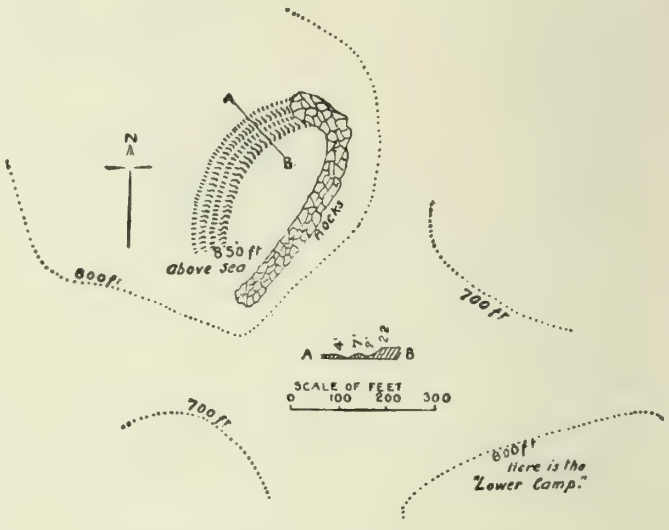
Lydham.—Lower Camp, Roveries Wood, 2¼ miles north from Bishop's Castle, is situated on a sharply-defined hill overlooking the valley of the Camlad. Naturally it is a strong position, the declivity of the hill being pronouncedly steep all round, and the summit rising high within the entrenchments. The latter consists of a single vallum 18 ft. high above the line of its junction with the hill-side, and on the north, where the entrance lies, the works are stronger. Here a rampart 3 ft. high supports a broad vallum with an escarpment 15 ft. in height, at its foot is a berme and another escarpment of 25 ft. into a fosse 3 ft. deep. This extremely strong work continues for 350 ft. from the entrance—which has the ends of the vallum inturned—and confronts a neck of rock which connects this summit with another which is also fortified; from the




Roveries Wood, Lower Camp, Lydham

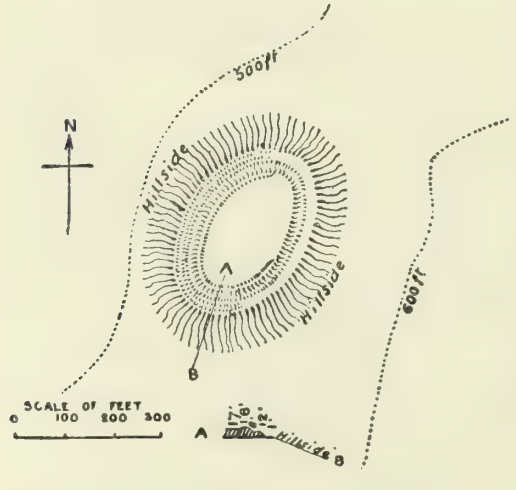
same neck, or ridge, a long outer work sweeps down the northern side of the hill, protecting the road to the stronghold; this appears to have been a sunken path, or at least a path defended by a vallum on its outer side; but the growth of vegetation for long ages has so displaced the track that its strength cannot now be estimated.

Lydham.—Upper Camp, Roveries Wood. From the last-mentioned camp a ridge of rock leads to another height 50 ft. above the 'Lower Camp' and 150 ft. above the dip in the connecting line. Facing the former camp is a clatter of rock which presents a formidable front to an invader who might possibly have stormed the lower camp. Joining the northern extremity of rock an arc of double fosse and middle vallum bends around the western side, inclosing a small oval area; it is but 400 ft. in length, but is a huge work cut out of the shale, an escarpment 20 ft. in height, a counterscarp of 5 ft., a second scarp of 7 ft., and a counterscarp of 4 ft., a work of infinite labour. The southern part of these entrenchments is broken, so that it is impossible to form any idea of the construction or defences of the entrance which formerly was placed at this spot.




Roveries Wood, Upper Camp, Lydham

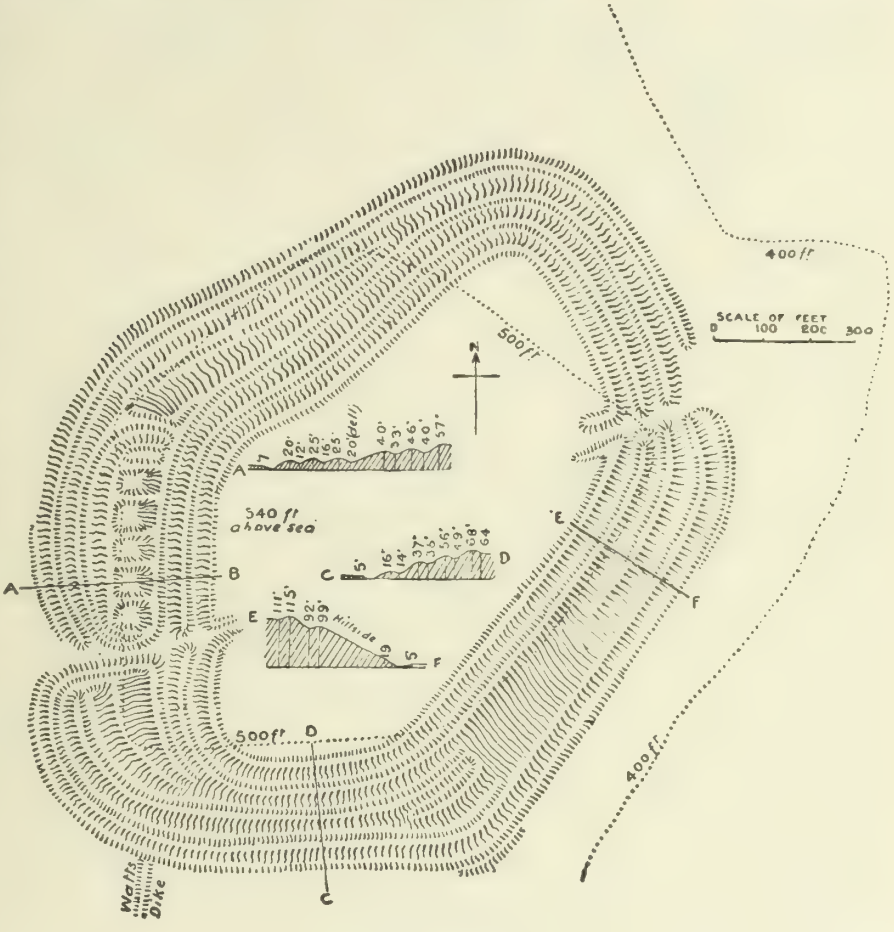
Minsterley.—On Callow Hill, 8 miles south-west by west from Shrewsbury, is a small stronghold occupying the elliptical summit, 230 ft. above a stream flowing fully half a mile to the east. The entrenchments originally consisted of a double vallum, double fosse, and an outer bank on the edge of the hill-side; these have almost perished on the eastern side, otherwise, although greatly weather-worn, they are fairly perfect. From the interior rises a low rampart 1 ft. high from which an escarpment of 10 ft. descends into a fosse with a counterscarp of 4 ft. This second vallum has an escarpment 12 ft. high, and at its base a fosse 1 ft. deep is formed by a low bank of the same height, from which descends the steep declivity of the hill.




Callow Hill, Minsterley

Oswestry. — Caer Ogran, also called 'Hen Dinas' or the old stronghold, is now known as 'Old Oswestry.' Within a mile to the north of the town this vast fortified site covers about 56 acres, the interior area being

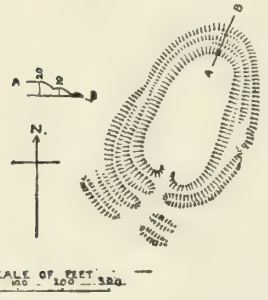
nearly 16 acres. An irregular oval in plan, it is surrounded by four and five valla with their respective ditches, and presents many unusual features. The entrance on the west is between formidable earthworks ; on the southern side one embracing vallum contains two escarpments divided by a terrace, with a fosse doubling around the termination of another strong vallum ; on the northern side the outer vallum is distinct, but the second curves up the hill to a higher one above a wide portion of the hill-side which contains six rectangular hollows, evidently dwelling-places, protected by a fosse which curves around the last hollow until it abuts on the higher vallum. Above these defences access is gained between a double vallum with inturned ends, and a double fosse. The strength of this entrance—in primitive warfare—would have been almost impregnable. On the north side the five valla are reduced to four ; the same also occurs on the south for a certain length, but at a blunt angle where the entrenchments take a north-easterly direction the ramparts are increased to six ; the defences then largely depend on the steepness of the hillside with a double vallum at the top and a fosse at the bottom. As the eastern entrance is approached five earthen walls are again fashioned on the slope, confronting four on the northern side of the path, and whilst the track between the works cannot be described as oblique, the termination of the various ramparts are not equal, and the strategical arrangement of the works is more systematic than at first sight appears, fosse confronting agger, and vallum opposite to fosse, until the interior is ultimately gained between two inturned ramparts.




Old Oswestry

This great fort is built on the line of Watt's Dyke. The first and best guarded entrance is on the Welsh side, the second entrance with steeper natural approach is to the east side.

PONTESBURY.—PONTESFORD HILL, LOWER CAMP, 6½ miles south-west from Shrewsbury. This hill is a ridge, taking a southerly course from Pontesford village, parallel to the Habberley Brook flowing on the east, attaining a great height. On the northern extremity, rising 140 ft. above the ground level, is a fort of ovoid plan governed by the contour of the hill, with an interior area of 270 ft. by 150 ft. Any former rampart that may have been constructed has gone and the innermost defence is a scarp, which at the north-west is 10 ft. high and at the south-west 6 ft.; around this is a terrace which has a fragment of an outer bank at the north. A second scarp 10 ft. at the north-west and 6 ft. at the south-west, has a similar fragment of a bank in the same position and just below the other. Around the northern half of the camp a third scarp is merged into the hill; but round the southern half—which faces the ascending ridge and is the most accessible part, where also is the entrance—the second terrace becomes a fosse, 4 ft. deep to the west of the entrance and 8 ft. to the east. The latter has no outer bank on account of the exterior rise of the hill. The entrance on the south is between two incurved ends of the scarp and over a causeway between the ditches, beyond which the hill narrows, and across this neck of rock are two ditches and a double vallum which run out to the hill-side. These are more perfect on the west where the scarps are respectively 3 ft. and 2 ft. and the counterscarps 2 ft. and 1 ft.[5] Outside the last bank on the south-west is a well. To the south of the camp a second division of the hill rises 350 ft. above it, and the hill is again almost divided by another waist from the largest and most southerly section which is crowned by an extensive and strong camp.

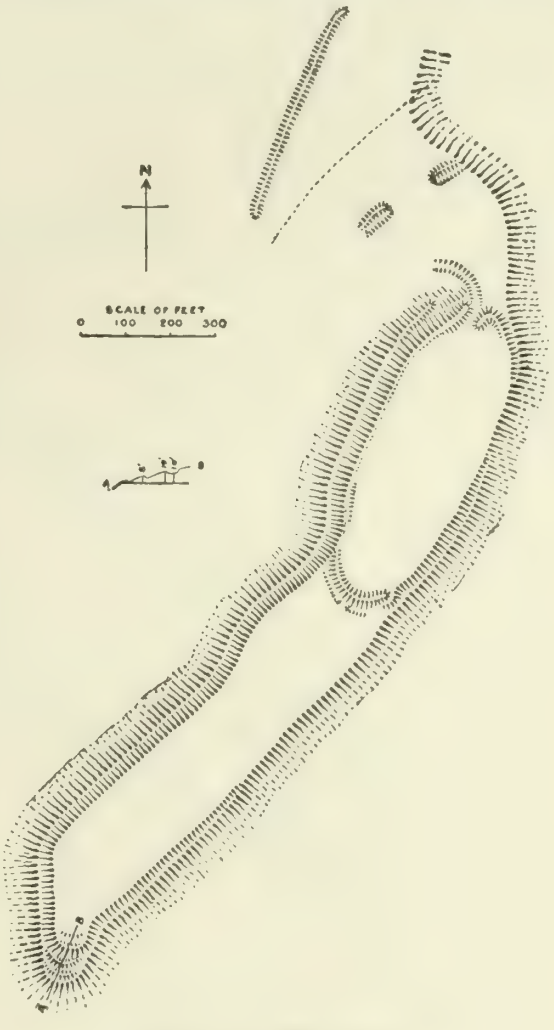


LOWER CAMP, PONTESBURY

PONTESBURY.—EARL'S HILL is the highest and southernmost portion of Pontesford Hill, and upon its summit is a large double stronghold. On the highest part of this rocky eminence stands the principal camp, 447 ft. above the lower stronghold already described. It is oval in plan, 660 ft. long and 240 ft. at its widest; the high rocky interior is defended only by scarps on its long sides. On the eastern side the precipice of the hill is the only defence to the northern part, but a narrow terrace gradually becomes apparent towards the southern end. On the western side a terrace, or path, has been cut in the solid rock with a breastwork from 2 ft. high to 5 ft. near the entrance on the north, and beneath a steep scarp of 25 ft. another terrace traverses the side of the hill; this also appears to have been provided with an outer bank, but faint and disconnected traces only remain until the northern extremity is reached where it is well defined for a length of about 100 ft. At the rounded north end is the entrance, between two aggers which rise to 5 ft., that on the east incurves and that on the west sweeps past it with a slight outcurve, thus overlapping and commanding the sunken road approach, which curves down the hill towards the west. Beyond the entrance the ridge narrows and is cut across by a fosse and outer bank 3 ft. high. At a lower level a ditch crosses the rock, and is probably an old boundary line, and again beyond it is another traverse of fosse and

[5] Mr. E. S. Cobbold's plan of this camp is good and we have taken the liberty of reproducing it.

vallum, the latter rising 8 ft. from the near side and an outer scarp of 13 ft. A small piece of curved agger 6 ft. high remains beyond this on the declining ground. The southern curve of the camp is inclosed by a strong work crossing the rock separating the main camp from a subsidiary one. This defence is composed of an excavation providing a path lower than the interior, thereby making a sunken terrace, having a rampart 5 ft. in height with an entrance round its eastern extremity. Outside this, and 25 ft. lower, is hewn a fosse with a steep descent in the middle to the lower camp. This southern area is scarped around three parts, it is most pronounced on the west side where two terraces are cut in the rock with a precipitous scarp of 20 ft. between them ; but on the east the scarp is lost in the hill-side at about half its length. At the extreme southern end is a triple defence ; first is a bank 3 ft. high on the outer side of an excavated hollow, it has a scarp of 12 ft. into a shallow fosse, a second scarp of 8 ft. and a low bank on the verge of the continued descent. A spring rises on the western side of the hill 300 ft. from the summit.

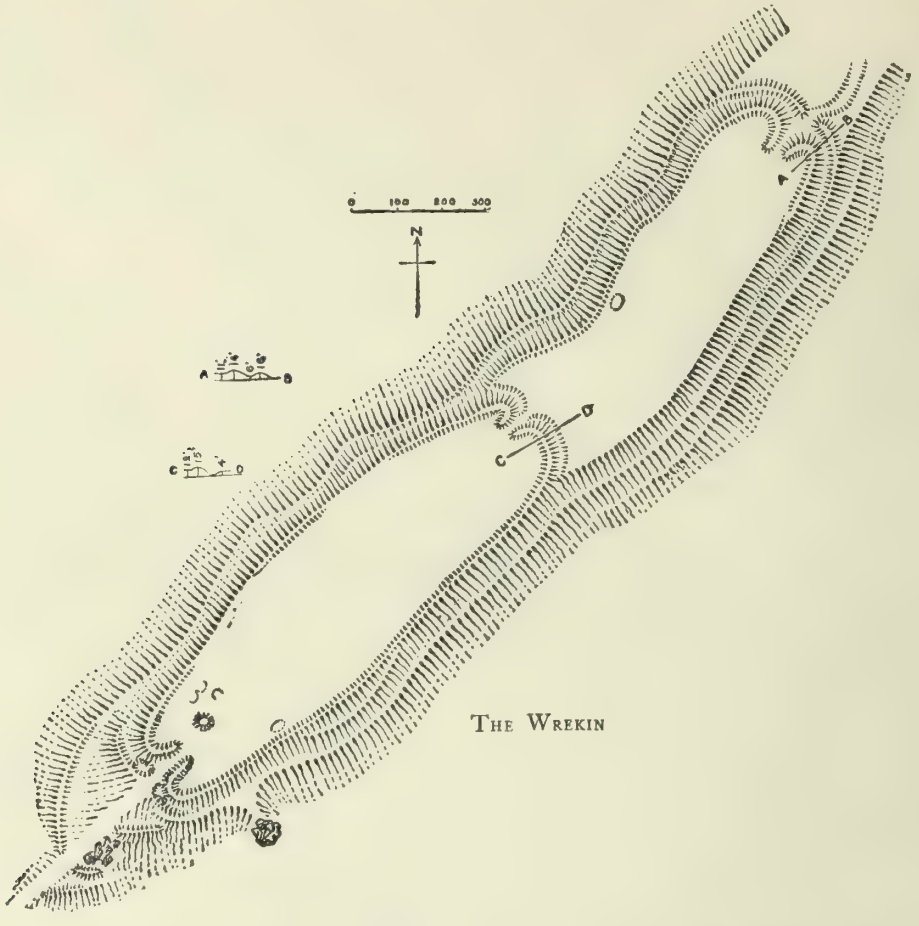



Earl's Hill, Pontesbury

Wellington.—The Wrekin, 2½ miles south-west by south of Wellington, is an isolated hill rising 900 ft. above the surrounding land. On its longer axis, north-east to south-west, it rises with a very steep ascent, but the two sides are precipitous ; the whole hill is a stronghold, and at its altitude is a double camp 2,000 ft. long. The fortifications, somewhat mutilated, have consisted of a double vallum and fosse, with outworks.

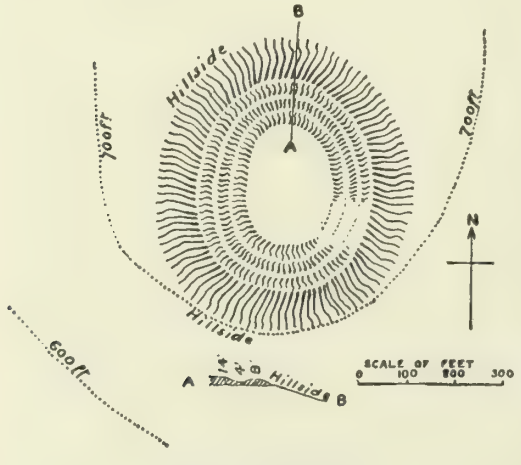
At the north-east entrance access was by a curved sunken path between a vallum 8 ft. high, which cuts across the spine of the hill, a fosse 4 ft. 6 in. deep, and an inturned vallum which here rises to 12 ft. on each side. This is locally known as ' Hell Gate.' The camp now entered is 850 ft. long, the area of rock being on an average 18 ft above the first artificial defence on the south-east ; along the whole of this side, 20 ft. and more down the hill-side, was a second fosse, but the outer vallum has all but perished, leaving an irregular terrace ; on the opposite side this work is more clearly defined. Gradually rising to a greater height another entrenchment crosses the width of the hill, a fosse 4 ft. deep and a vallum 15 ft. high, with a breastwork on the interior of 3 ft. Through these is the entrance—called ' Heaven Gate '

—to the second and higher camp, the agger also inturned on both sides. Similar earthworks to those of the first camp surround this ; at places the rampart is quite lost, and the height above the outer defence varies



The Wrekin

according to the formation of the rock. This second camp is 1,100 ft. long ; at its south-western extremity the vallum is returned to the interior, and the fosse, which crosses the ridge, contains a hollow on each side which apparently served for the guard. On the south of this entrance a path leads to an almost isolated pinnacle of rock, towering above the valley, affording a valuable adjunct to the defences.




Walton, Worthen

From the last named entrance a path—protected by an agger on both sides—gradually slopes downwards for a few hundred feet then again rises to another rock which dominates the final and steep descent to the valley.

Within the south-western entrance is a low tumulus, and on the north of it are indications of three hut circles. A worked hollow, in both the upper and lower camps, possibly served for water storage.

Worthen.—At Walton, 2 miles west by north from Worthen, and on

the eastern side of the Long Mountain, are the remains of an oval hill fort. The works consist of a scarp 10 ft. in height, a fosse 4 ft. deep, and a vallum 8 ft. high, leaving a slight line of demarcation where the artificial scarp rests on the natural slope of the hill. At the south-east the entrenchments are almost destroyed for a length of about 100 ft., otherwise this work is fairly perfect.

## HILL FORTS LESS DEPENDENT ON NATURAL SLOPES FOR PROTECTION

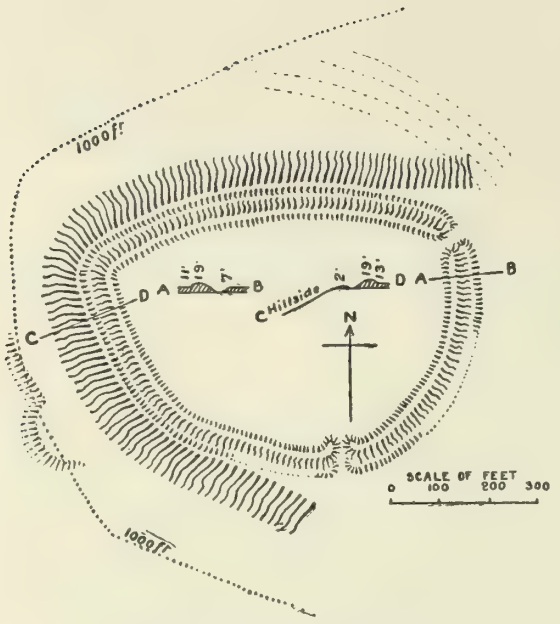
[Class B. (2)]

Bitterley.—On Titterstone Clee Hill, 5½ miles north-east from Ludlow, the summit has been occupied by a camp of large area, measuring 1,680 ft. from the north to south and 2,640 ft. from east to west. The entrance was on the south-south-east, but, like Abdon Burf, the stone of the fortress is coveted for the construction of a railway, and a line has been laid whereby the material may be obtained and the hill fort demolished.

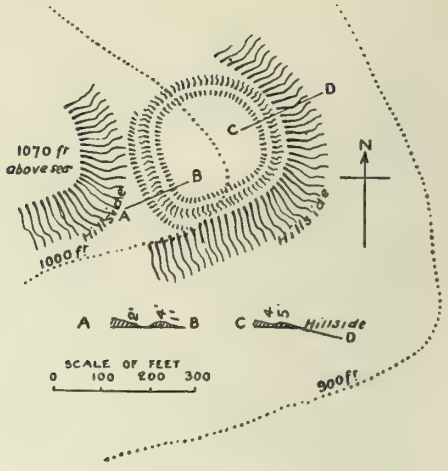
Clee St. Margaret.—Clee Burf, the southerly of the two summits of the Brown Clee Hills, is 8 miles north-west from Ludlow. It makes one of a trio of camps in these hills, being one mile east across a valley from Nordy Bank, and 1½ miles south along a ridge from Abdon Burf. The vallum remains only on the north side, but the surface of the ground has been greatly disturbed ; within and without the area of the camp are innumerable hollows which are supposed to have been made in the search for coal ; should the other theory of hut circles be maintained the locality must have been very closely inhabited, for they extend down the hill-side and along the ridge to Abdon Burf.

Clee St. Margaret.—Nordy Bank Camp, 7¼ miles north-north-east from Ludlow. It is situated on a steep round hill, which is a spur jutting from the Brown Clee Hill in a westerly direction, rising 550 ft. above the adjacent country, except on the west where a ridge connects it with the higher Brown Clee. It is an irregular ellipse in plan, surrounded by a single vallum and fosse, the former is 12 ft. and 13 ft. in height, and the latter 6 ft. and 7 ft. in depth, but in parts it is obliterated ; the general height of the rampart around the interior varies from 6 ft. to 8 ft. On the north, west, and south, the steep declivity of the hill provides a second wall ; on the east the fosse is open to the land level, having no revetment. There are two openings through the entrenchments, one at the north-east, the other at the south, both of them near the verge of the steep part of the hill. The first is a simple opening, the second has both ends of the vallum slightly incurved. Some distance down the hill-side on the west is an artificial scarp which appears to have been a semicircular outwork, but its strength has been obscured by the tread of cattle ; and on the north lines of entrenchments, varying from three to six in number, and averaging 6 ft. in height and depth, descend the hill from the north-eastern entrance.

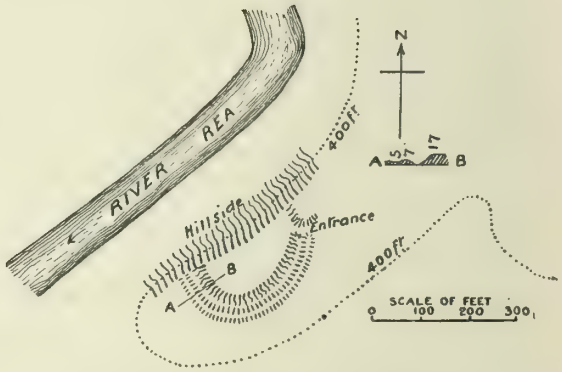
Cleobury Mortimer.—Castle Toot. Upon the edge of the hill-side, 100 ft. above the River Rea which flows at its base, a semicircular plot of ground is inclosed by a steep escarpment of 17 ft. deep to a fosse with a



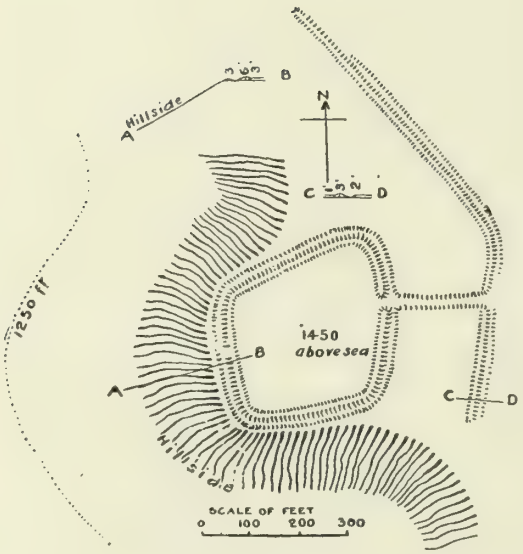

Nordy Bank, Clee St. Margaret



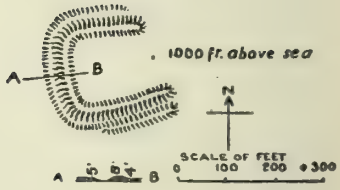

Garn Bank, Clun




Castle Toot, Cleobury Mortimer




Caer din Ring, Clun




Radnor Wood, Clunbury

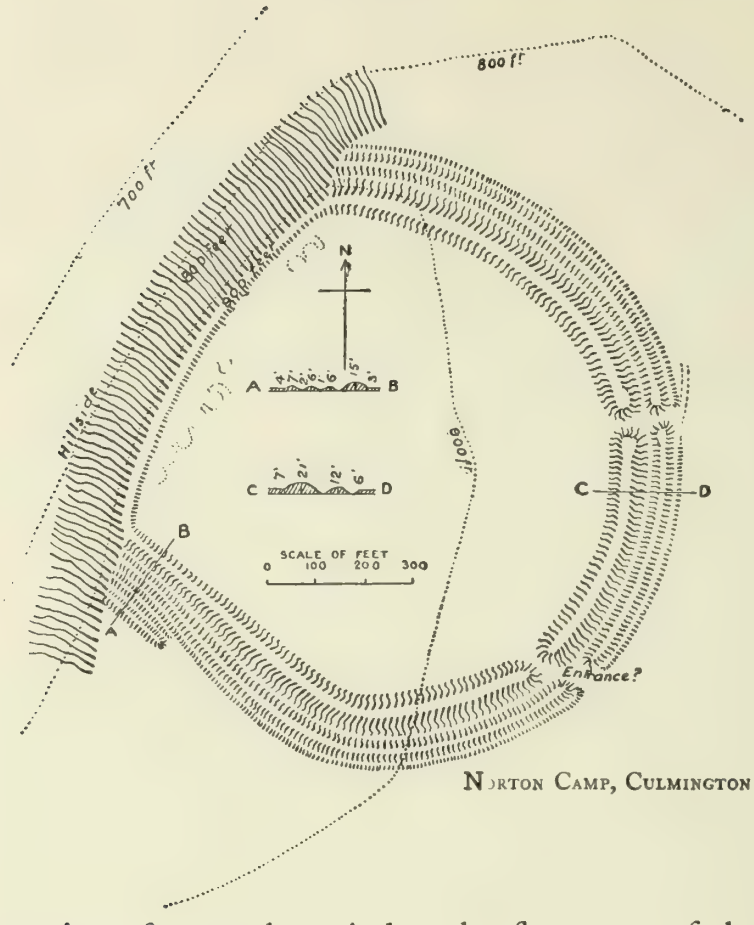
counterscarp 7 ft. high, and an outer bank of 2 ft. Towards the northern side is the entrance, on the far side of which a curved scarp only defends the short distance to the edge of the hill. The verge of the hill is the chord of this arc, a defence strengthened by no artificial work.

CLUN.—CAER DIN RING, 4½ miles north-west from Clun. Upon a bleak height 650 ft. above the Folly Brook which flows by the western base, is a large but weak camp. Naturally strong in position on the western curve, the ground is open to invasion on the east. The 'ring' of square formation—which was placed at the strongest point—has a single vallum rising 3 ft. from the interior, with an escarpment of 6 ft. into a fosse 3 ft. deep. From the entrance on the east may be traced the slight remains of the sunken approach, 200 ft. in length, from which entrenchments branching to either side may be discerned; these apparently extended to the edge of the steeper ground on the north and the south, thereby inclosing a large area. So slight are these works that without palisading they would be useless even for pastoral purposes. This inhospitable area is now under grass, but has evidently at some previous age been under the plough, which would account for so insignificant a work on a dominating position.

CLUN.—GARN BANK, 4 miles west by north from Clun. On a south-eastern slope between the River Clun on the south, and the Folly Brook on the east, and 300 ft. above their junction half a mile distant, are the worn banks of an irregular, circular camp. It is cinctured by a vallum 5 ft. high on the east, where the artificial scarp is continuous with the slope of the hill, but its height above the interior is only 1 ft. On the west, where the camp is dominated by yet higher ground, the vallum rises 3 ft. with a scarp of 4 ft. and a fosse 2 ft. deep. This shallow fosse is, however, neutralized by the external rise in the ground; the camp could be of little use as a defence, but from its relative position to the Vron, high above the intervening Folly Brook, it may have been a signalling station.

CLUNBURY.—In RADNOR WOOD, 1½ miles east-north-east from Clun, a small entrenchment stands upon the highest portion of a hill, about 500 ft. above the River Clun. Three sides of a quadrangular inclosure remain, the eastern side having perished, consisting of a vallum 4 ft. high from the interior with a scarp 8 ft. high, and a fosse 5 ft. deep. An outer bank remains on the south for a length of 150 ft. The small size precludes any idea of a warriors' stronghold, but it forms a link in the line of protected stations for the transmission of messages.

CULMINGTON.—NORTON CAMP, 1 mile south-east of 'Craven Arms,' occupies a very steep hill 500 ft. above its surroundings. This camp is of great strength both naturally and artificially; it is surrounded by a double vallum—the inner one varying from 15 ft. to 21 ft. in height, and the outer 12 ft. at its highest—except on the north-west where the precipitous hill renders any work but a 6 ft. rampart needless. At the south-west, where the entrenchments end on the brow of the hill, the ramparts are increased to four; it is the weakest point for a surprise, for the contour of the hill allows of a circuitous approach by the edge of the precipice, unseen until close upon the stronghold. There are two entrances, both on the eastern side; that both are ancient is evident by the broadened ends of the aggers in one case, and by the oblique arrangement in the other; this side, looking upon a

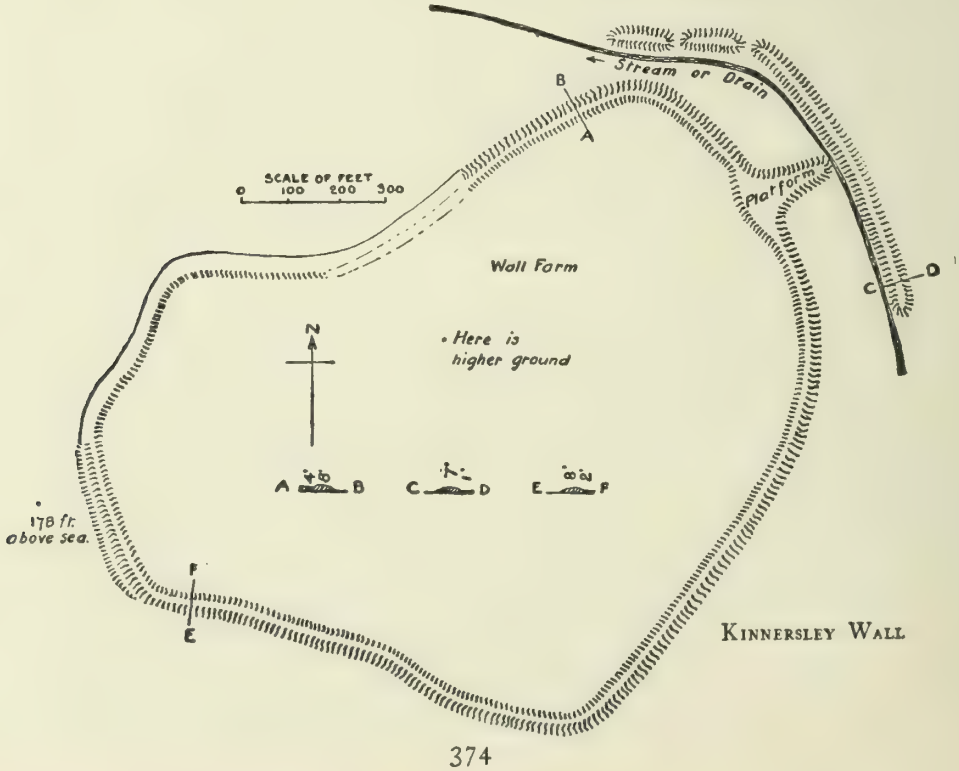



NORTON CAMP, CULMINGTON

stretch of more even ground, has the strongest earthworks. An old sunk road winds around the northern side of the hill; the present path occupies this trackway on the north, but makes a wider detour as it curves towards the east, again approaching the works at the north-east entrance, which was evidently the principal of the two means of access. The modern path continues in the fosse to the second entrance.

Within the north-west side of the camp, which part has remained undisturbed by the plough, are the remains of seven hut circles, the flat stones of the walls still standing 2 ft. high in one place.

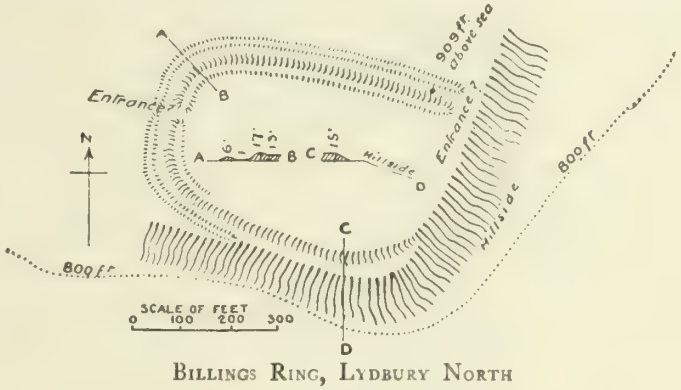
KINNERSLEY.—KINNERSLEY WALL, 4 miles north by east from Wellington. A large tract of ground, formerly surrounded by a marsh, now




KINNERSLEY WALL

drained, is inclosed by a broad vallum, 45 ft. wide at its base, which rises from 4 ft. to 6 ft. from the interior, and is 8 ft. in height on the exterior; a long piece of this has been destroyed at the north-west. At the west a portion of a fosse, 450 ft. long, remains outside the vallum. On the north-east, where there is a continuation of firm ground and consequently is the most assailable side, the vallum curves slightly on the inner side, and protrudes in the form of a tongue on the outside for a distance of 200 ft. At the end of this, but independent of it, another vallum runs almost parallel to the first, with an average height of 7 ft. Between these works runs a small stream draining the morass, but forming no feature of the original defence.

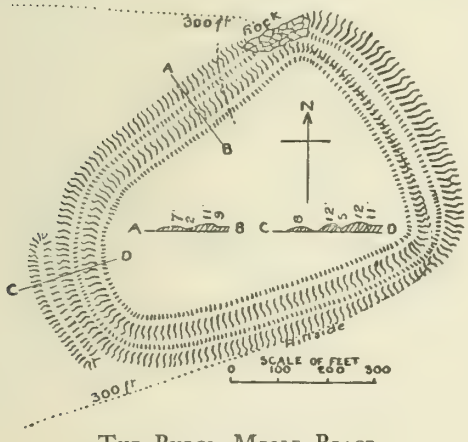
Lydbury North.—Billings Ring, $2\frac{3}{4}$ miles east by south from Bishop's Castle, stands upon a height 400 ft. above the River Onny which flows within a mile of its base. The camp, somewhat approaching a rectangle in plan, is naturally defended on the north and the south by the rapid fall of the ground which, on the east, is precipitous. A double vallum and intermediate fosse extend around the north and west sides, now terminating at the south-western curve, leaving but a terrace on the southern slope of the hill; here the works have evidently been tampered with, for the upper vallum, without doubt, was originally cresting this portion of the 15-ft. escarpment. The fosse has been excavated in the rocks, and, being impossible for rabbit-burrowing and bare of timber, has preserved its original form of almost perpendicular sides and flat bottom better than many other examples.



Billings Ring, Lydbury North

The earthworks of the northern side are on the summit of the hill, supported on the east by the natural steepness, and curve down the slope of the hill on the west side towards the south, which side is on a lower level. The entrance on the west is quite simple and opens on to the level ridge of the hill.

At a considerable distance down the southern side of the hill, and facing the flat ground of a broad valley, a double vallum provided an outwork.

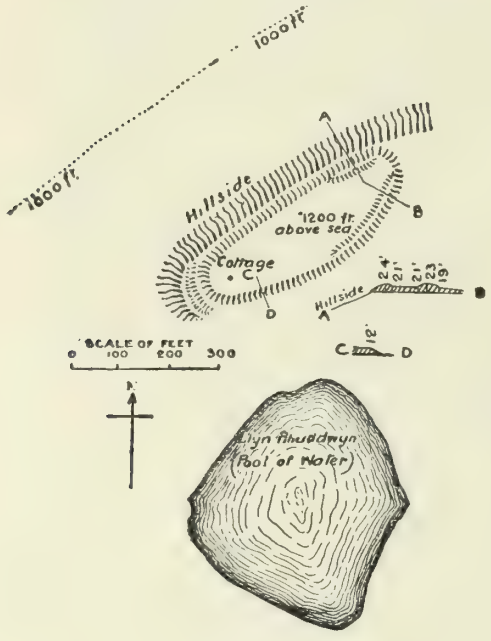


The Burgs, Meole Brace

Meole Brace and Condover.—The Burgs or Burys, $2\frac{1}{4}$ miles south of Shrewsbury, is upon a low hill which greatly steepens towards the east. The plan partakes of a rectangle towards the east, and is semicircular on the west; and the circumvallation consisted of two valla with a single fosse between them, but the defences are now imperfect. On the west—the lower ground—an agger nearly 300 ft. in length provided additional defence on the most assailable side; but the village buildings have encroached upon

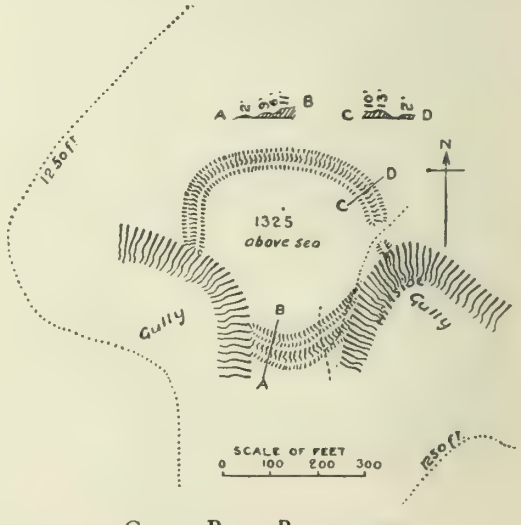
this part, and greatly mutilated the works; it is probable that the entrance was on this side, but it is now impossible to trace it. A postern enters the camp at the north, near to an outcrop of rock, but modern use has enlarged it beyond its original construction. The most perfect entrenchments are at the east, where the inner vallum rises 4 ft. and has an escarpment over 20 ft. in height with a counterscarp 6 ft., outside which a vallum is obtained by the fall of the hill.

Oswestry.—Coed y Gaer, $3\frac{3}{4}$ miles west from Oswestry. This small oval camp stands upon the highest point of a hill 600 ft. above the River Cynllaith which forms the county boundary with Denbighshire. The original rampart is for the most part destroyed, the two remaining portions are on the north and south-east, the former 3 ft. high, the latter 2 ft.; but the vallum at the former point has an escarpment 24 ft. high above the brow of the hill, and at the latter 4 ft. above a gentle slope. At the south-western curve are the remains of a fosse; but this spot being a popular resort for picnics and their attendant revels, the whole work has been badly mutilated.




Coed y Gaer, Oswestry

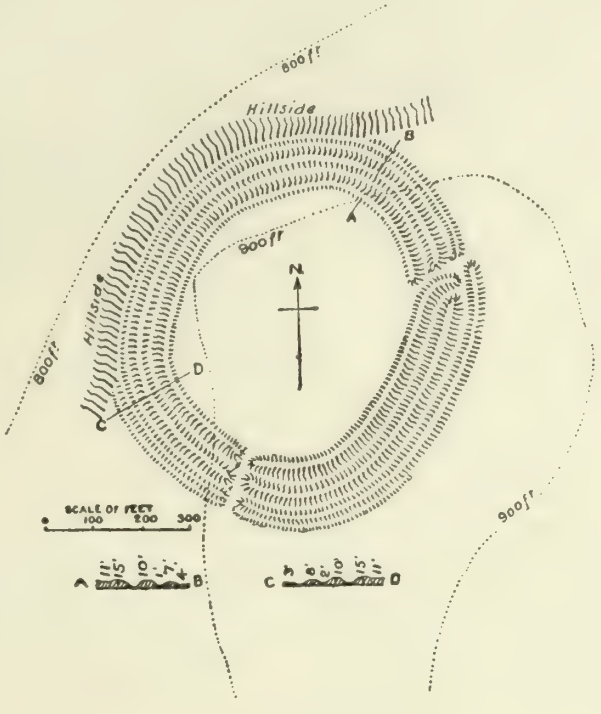
Ratlinghope.—Castle Ring, Stitt Hill, $3\frac{1}{4}$ miles north-west from Church Stretton. On the summit of a long ridge rising from the south, and on the narrowest part of it between the depth of Swinbatch on the east and a steep hollow on the west, the shape of Stitt Hill governs the peculiar formation of the Castle Ring. The northern boundary of the camp is a semicircular entrenchment of a vallum and fosse, its western extremity terminates at a spot where the hill-side assumes great steepness; the same conditions seem to apply to the eastern end of the entrenchment, but a modern cart track has here caused it to be broken away. This northern line of defence consists of an extremely wide fosse 5 ft. deep at one point, a vallum 10 ft. 6 in. high, and a rampart 3 ft. in height. The sides of the camp, pinched in between two gullies, needed no protection above that naturally provided; but the southern side, curving across the narrow ridge, has a flattened edge on its interior area and 5 ft. below is a ditch 3 ft. deep, another escarpment of 9 ft. rests in a ditch 2 ft. in depth. A cart road ascends at this side and has




Castle Ring, Ratlinghope

broken through the entrenchments, another track branching from it outside the works, enters, and continues its way through the fosse up the hill and out between the works on the north. In the north-west part of the interior is a hollow which probably served for a water tank.

Rushbury.—The Ditches, 6¾ miles east from Church Stretton, stand upon a rounded hill, the highest in the Wenlock Edge, 400 ft. above the River Corve which flows 1½ miles to the south-east. The camp is almost circular, covering eight acres, and is surrounded by a triple vallum, but on the south-western side only is a third—or outer—fosse. The last mentioned is the most accessible side, the north and west are better protected by the natural fall of the hill. The principal entrance is at the north-east and here is another example of an out-curved vallum forming a side wall to the passage. It is the innermost vallum which thus turns outwards, the middle vallum stopping short to allow it to pass, and its end finally abuts on the inner side of the outer vallum. On the north of the entrance path the three ramparts end in a row, slightly oblique; on this side of the camp the inner vallum is 15 ft. in height, the middle one 12 ft., and the outer 3 ft. Another entrance, apparently ancient, is on the south-western side; it is of simple character, being cut through the entrenchments in an almost straight line; the works are of nearly the same strength all round, but on this side another fosse is outside the third vallum for nearly 500 ft. on each side of the entrance.

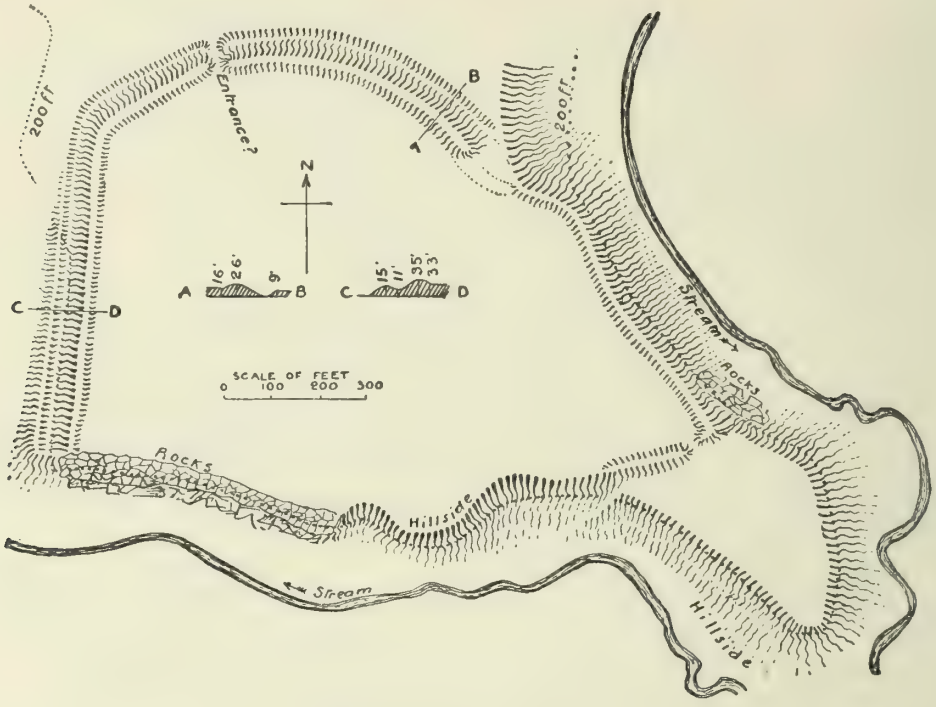



The Ditches, Rushbury

Worfield.—Chesterton Walls, 4¾ miles north-east from Bridgnorth, is a large entrenched area following the hill-side except on the north where the ground gently falls away. This latter side has a vallum and fosse of considerable strength, describing an arc; from the interior the vallum rises 10 ft., descending 26 ft. into a fosse 9 ft. in depth. The entrance on this side is a simple opening; the entry at the eastern extremity, on the brow of the hill, is a modern way for farm carts, the greater part of the site being under the plough. On the western side these works are continued, but the greater depth of the hill-side has been utilized, giving the vallum a height of 22 ft.; the fosse below and the breastwork above are weak, being 4 ft. and 2 ft. respectively. The south and east are contained within a protecting curve of the River Worf; on the south the natural rock and declivity of the hill have needed no artificial work, the precipitous sides girded by the river precluding any assault. At the south-eastern corner a tongue of land fashioned by the bend of the river is at a slightly lower level, and is severed from the main

camp by an agger 13 ft. in height; in this is a means of egress to the external plateau, and from the latter a path—at the western angle—covered by the agger, descends to the stream beneath. Between this gateway and the broken vallum on the north the hill-side, 80 ft. in height, is crested by a rampart.

Although of a simple character the site is so admirably chosen that the position is of great strength and convenience.

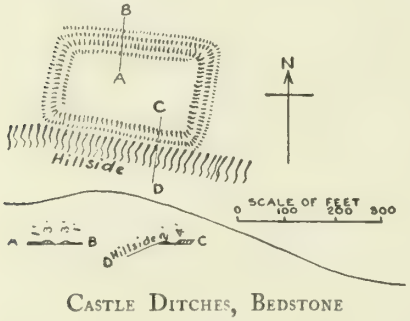



Chesterton Walls, Worfield

## SIMPLE DEFENSIVE INCLOSURES

### [Class C]

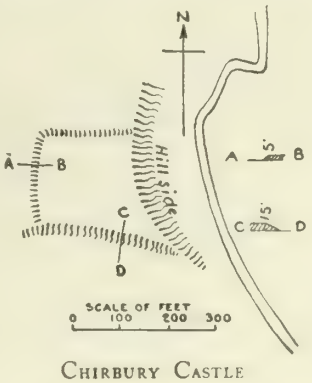
Bedstone.—Castle Ditches, 4½ miles south-east from Clun. Situated on ground sloping in a southerly direction down to a stream is a quadrangular camp 350 ft. long from east to west, and 230 ft. north to south. The remaining entrenchments are curiously unequal, but point to original defences of double vallum and intermediate fosse; these are yet to be seen on the north, each vallum being 3 ft. in height. On the east the outer vallum has gone, while on the south and east the inner vallum is lost. On the south the outer vallum finds its escarpment in the slope of the hill.




Castle Ditches, Bedstone

Chirbury: Chirbury Castle.—The ancient Cherburg, Cyrigbyrig of the Saxon Chronicle, is 7¼ miles north-west from Bishop's Castle. This simple inclosure in its present state can find no place but in Class C, though, but for the hand of the destroyer, it would possibly have figured in Class E. Probably this is the site on which Ethelfleda wrought a burh in the year 915;

it lies in a field variously called the 'Castle Field' and the 'King's Orchard,' and is situated 25 ft. above a bend of the stream on the east, which largely contributed to its defence also on the north and the south. All that remains is a slight scarp on three sides of a square—the fourth being the bank of the stream—with its south-eastern corner prolonged to an acute angle by reason of the curve of the bank.



CHIRBURY CASTLE

CHURCH PULVERBATCH.—One mile west of the village of Picklescott is an elevated tract of moorland known as Wilderley Hill, on the eastward slope of which lies an earthwork of oval plan with respective diameters of 175 ft. and 135 ft. It is surrounded by the remains of a double vallum and intermediate fosse; the best preserved portion is on the north, where the inner vallum rises 2 ft. above the interior with a scarp of 5 ft. The fosse is 2 ft. deep and the outer vallum now has a scarp only 1 ft. in height. Only one-third of the latter remains, and the whole of the entrenchments have perished on the south-east, leaving the faintest traces of their former course. A small stream runs close to the south of the camp.

CLAVERLEY.—BURF CASTLE, 3¼ miles south-east by east from Bridgnorth. Cultivation has almost obliterated the works of this camp, which stands 340 ft. above the River Severn. The remaining defences consist of a scarp only, 5 ft. high, on the north, 9 ft. on the west, and 7 ft. on the east, where the hollow of the fosse may be traced.

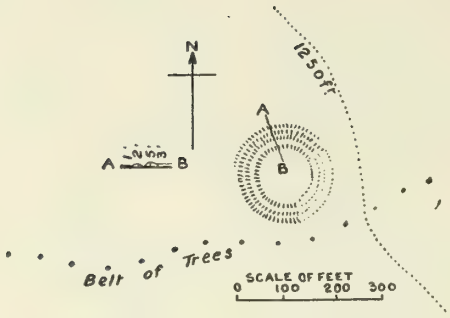
CLUN.—ROCKHILL CIRCLE, 1½ miles south-east from Clun. The remains of a small circular work lie close to the high road, consisting of a single vallum rising 1 ft. from the interior. On the north-west it has a scarp of 4 ft., on the west of 5 ft., and the fosse is generally 2 ft. deep. The diameter of the whole work is 130 ft.

LLANVAIR WATERDINE.—Close to the eastern side of Offa's Dyke, 3 miles south-west from Clun, is a small inclosure, almost circular, surrounded by a vallum and fosse. The general measurements are—a rampart 3 ft. high, the vallum 5 ft. and the fosse 3 ft. deep; these are most perfect on the south, but on the east they have been worn down and have been spread, the vallum to 12 ft. wide and the fosse to 6 ft. The entrance has been on the north-west.

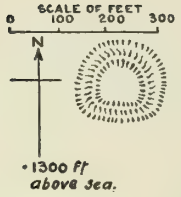
MORE.—LINLEY HILL CAMP, 5 miles north-east from Bishop's Castle, is situated on a high hill between the rivers East Onny and West Onny in a good position for signalling; for this small rectangular entrenchment of single vallum 85 ft. by 75 ft. would be suitable for that purpose.

NEEN SAVAGE.—At WALLTOWN, 2 miles north-north-east from Cleobury Mortimer, are the fragments of a square camp with rounded corners, of single vallum and fosse. The road to Bridgnorth runs through it, and a farm is situated within its area, two contributary agents to its mutilation.

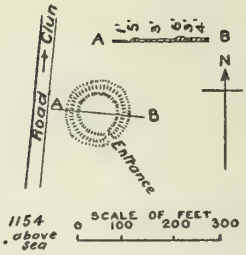
Around the interior area, 400 ft. square, a rampart rises 6 ft. at its highest spot on the south, the vallum is 12 ft. high at the north-west, and



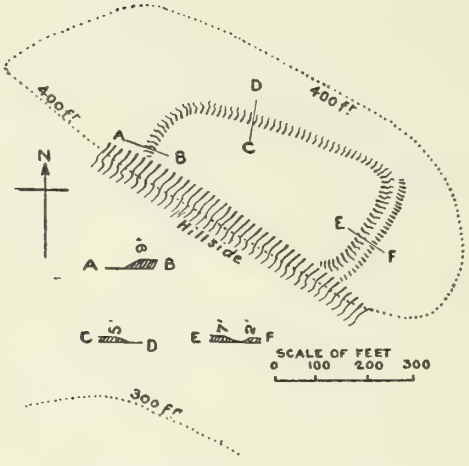

Wilderley Hill, Church Pulverbatch



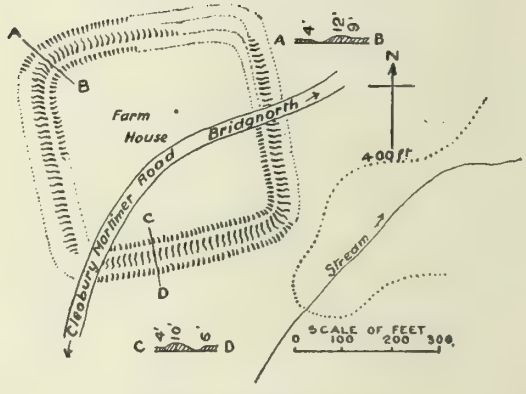

Camp near Garbitt Hall,
Llanvair Waterdine



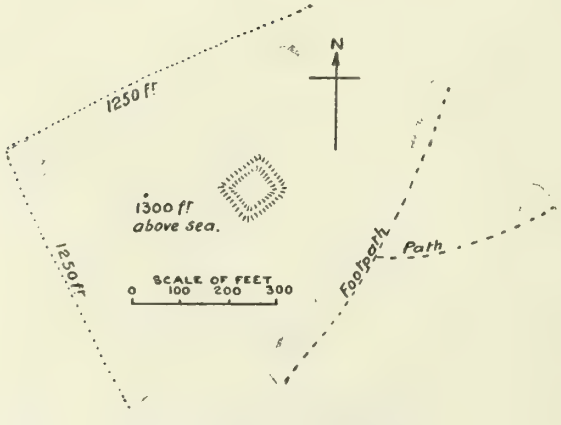

Rockhill Circle, Clun



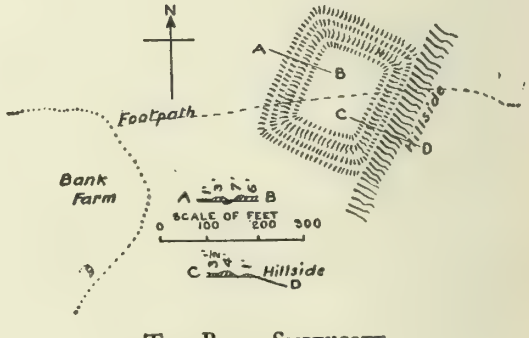

Burf Castle Hill, Claverley




Walltown, Neen Savage




Linley Hill Camp, More




The Bank, Smethcott

the fosse is 6 ft. deep on the south ; at other points the works are of varied minor heights, but the southern side is the most perfect. A stream flows close by the south-eastern angle.

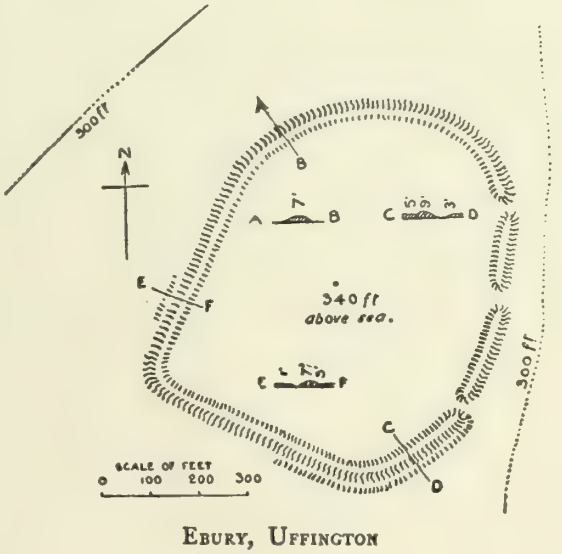
PONTESBURY.—On PONTESBURY HILL, 7½ miles south-west from Shrewsbury, is a summit called 'Nill's Hill' which is being quarried from the south and the quarry has now eaten into a small camp which was on the height. Its plan on the Ordnance Map is an oval 240 ft. long by 150 ft. wide ; the northern end only at present survives, and that is so mutilated as to be scarcely recognizable. A small amount of artificial scarping of the natural rock is all that is visible. From its position it was evidently a station to signal an approach from the west to the great forts on the neighbouring Pontesford Hill on the east (see Class B), from which the western view of the country was broken by the intervening Pontesbury Hill.

PONTESBURY.—On the same range of hills as the last mentioned camp, to the south and on much lower ground is a small ring camp, 71 ft. in diameter, similar to those at Clun, Llanvair Waterdine, and Wollaston. The ground within the circle so rises as to form a shallow hollow all round the inside of the vallum, this has a height from 3 ft. to 5 ft. with a very rounded contour, but, with the ditch 2 ft. deep, the whole area of soft earth has been so trampled down by cattle that it gives no adequate idea of its original strength.

SMETHCOTT.—THE BANK, 7½ miles south by west from Shrewsbury, is on ground sloping generally towards the east. A double vallum and fosse surround an oblong area ; the rampart is 1 ft. high, the first vallum is 7 ft. high on the west and 4 ft. on the east, the fosse and outer bank are respectively 3 ft. and 1 ft. on the west, which is the stronger of the two sides ; and on the east the fosse and outer vallum are 1 ft. high, the scarp of the latter being continuous with the hill-side.

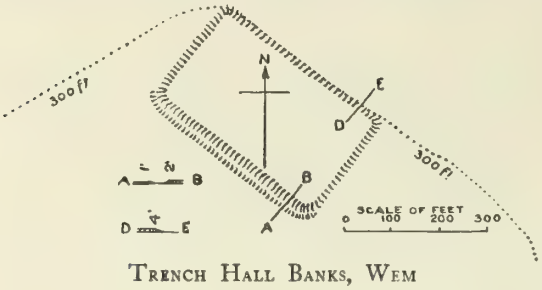
STAPLETON.—Half a mile south-west from Netley, a village 7 miles north of Church Stretton, and near Bank Farm, is an irregular quadrangular camp surrounded by the remains of a vallum, with traces of a fosse on the northern and western sides.

UFFINGTON.—On EBURY HILL, 4 miles north-east from Shrewsbury, and 140 ft. above the neighbouring streams, is a camp of fairly large proportions surrounded by a vallum averaging 7 ft. in height. This is broken through in three places on the east ; two of the apertures are modern, but the most southerly has the appearance of being the original entrance. This vallum was formerly surrounded by a fosse of which two fragments only remain ; a small piece on the west which is 1 ft. deep, and a much larger portion around the southern curve where the entrenchments are in the most perfect condition ; here the vallum rises 4 ft. from the interior and descends with an escarpment 9 ft. high into a fosse 3 ft. deep.



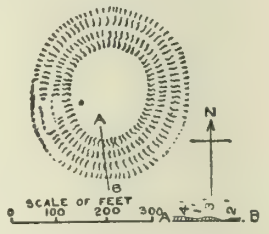

EBURY, UFFINGTON

WEM.—TRENCH HALL BANKS, 1 mile south by east from Wem. The plough has left very faint traces of a rectangular camp that formerly occupied the gentle declivity of the ground towards a stream on the north. All that can be seen is a scarp, nowhere higher than 4 ft., and along the long side towards the south-west the site of a fosse may be followed; this, however, is but 1 ft. deep.



TRENCH HALL BANKS, WEM

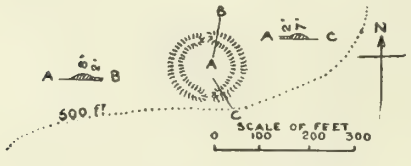
WENTNOR.—ROBURY RING, 3¼ miles west from Church Stretton. Since the Prolimoor was inclosed about the year 1858, and brought under cultivation, the plough has almost obliterated the camp that stood on a spot 1,500 ft. from the base of the Longmynd. It is an oval site, and it is evident that it was originally surrounded by a double vallum and double fosse. The inner vallum and fosse are now almost level, the outer vallum rising 2 ft. has an escarpment 3 ft. high and a counterscarp of 2 ft. The outer fosse is quite lost in a modern line of drainage around the north-western side, and a house, built on the south-western bank, has been fatal to the vallum, in which no sign remains of an entrance.



ROBURY RING, WENTNOR

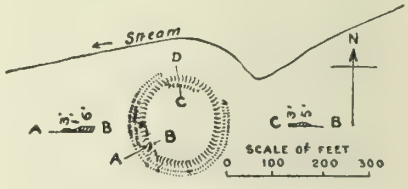
WESTBURY.—Near the south-western side of Westbury Station, 9 miles west from Shrewsbury, the site of a small camp is marked by a scarp around a circular area 80 ft. in diameter.

WISTANSTOW.—CHENEY LONGVILLE CIRCLE, 6 miles east south-east from Bishop's Castle. On a tongue of land 80 ft. above the Onny River, a small circular area is girdled by a vallum only; this rises 6 ft. from the interior and has a very steep escarpment 8 ft. in height. With the two opposite openings in the north and the south it might almost be taken for an amphitheatre.



CHENEY LONGVILLE CIRCLE, WISTANSTOW

WOLLASTON.—THE MOAT, 10¼ miles west from Shrewsbury. This is one of many instances where the modern name by which earthworks are known is a misnomer. It is a small oval camp originally surrounded by a vallum of which but a fragment 5 ft. in height remains at the north, the other portion of the area showing a scarp only, the rampart having perished. Around this is a fosse 2 ft. deep and a small outer vallum with an escarpment of 3 ft., except where levelled on the north.

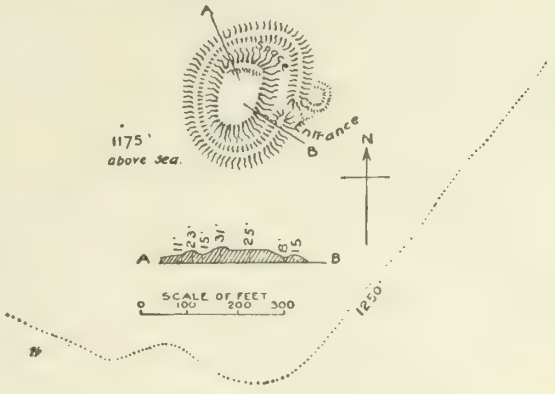


WOLLASTON MOAT

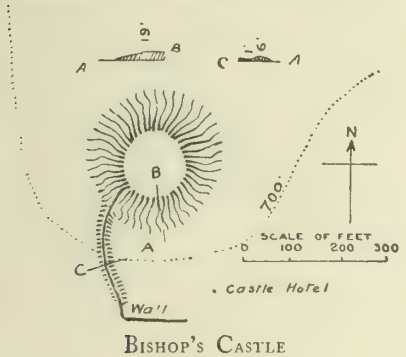
## MOUNTS

### [Class D]

Bettws-y-Crwyn.—Castell Bryn Amlwg, 8½ miles west by north from Clun, is a frontier earthwork standing upon, and formed out of, a spur of rock jutting out into a bog which, with the natural steep, and a stream on the west, strongly protects all sides but the north. The oval mount, 17 ft. high from the lowest part of the fosse, has a rampart 6 ft. high on its approachable side. The surrounding fosse, 7 ft. deep, has an outer vallum 12 ft. in height. At the north-east the fosse widens and is of greater depth. Outside the vallum on the eastern side is a small rectangular outwork, an area surrounded by a low vallum with a hollow on its southern exterior, which appears to be of a later date than the other works, and was possibly constructed to strengthen the entrance which here passes through the vallum.



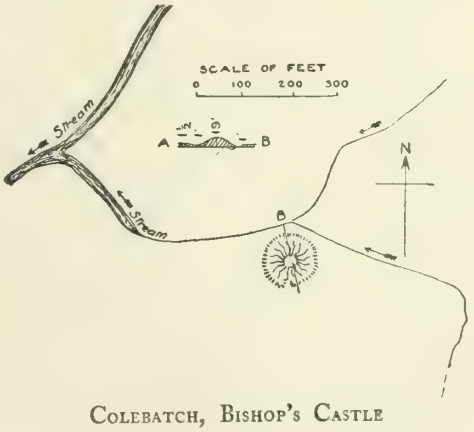

Castell Bryn Amlwg, Bettws-y-Crwyn




Bishop's Castle

Bishop's Castle.—The mount on which the mediaeval bishops of Hereford had a castle—originally called Lydbury Castle—is a natural knoll 19 ft. in height; the circular summit, 130 ft. in diameter, has long been used as a bowling-green. A few fragments of the walls of a shell keep may be traced around its circumference. The stone wall descending the mount and bounding the west site of the Castle Hotel garden has not the appearance of age, and cannot be identified sufficiently clearly as the boundary of a bailey to place this work under Class E.

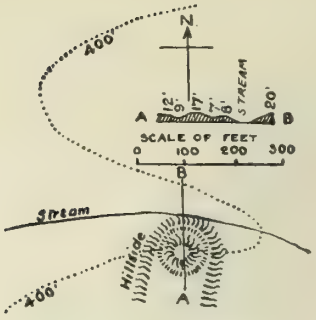
Bishop's Castle.—One mile south by west from the last work, near the village of Colebatch, is a small mount, 19 ft. in height, surrounded by a ditch now almost levelled, the greatest depth not exceeding 1 ft. It is placed on low ground with a stream flowing close to the north side. The entrance was apparently on the south.



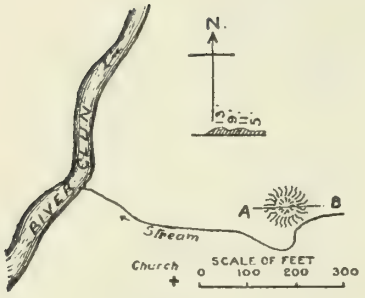

Colebatch, Bishop's Castle

Brompton and Rhiston.—Upper Gwarthlow, by the village of Churchstoke, 6 miles north-west from Bishop's Castle, is a small castle mound formed from the western extremity of a spur of land the sides of which strengthen the position. The mount—the natural hill

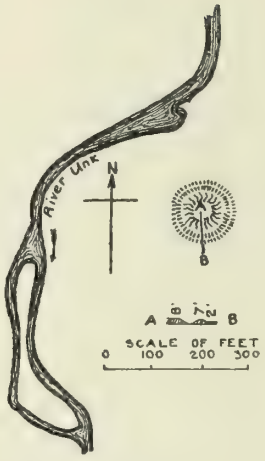
Bucknell Castle Mound



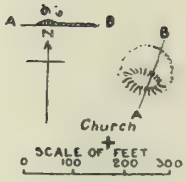

Wotherton, Chirbury



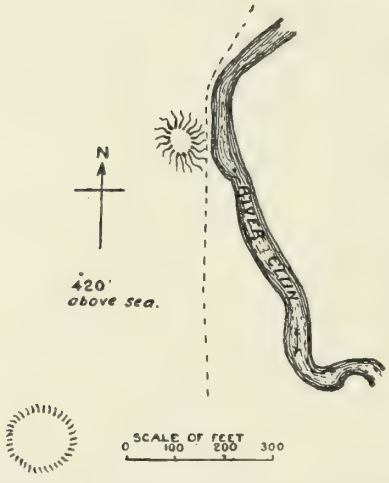

Clungunford




Bicton Mound, Clun

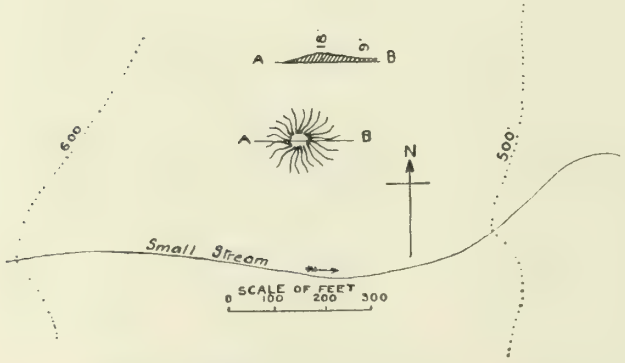



The Mount,
Lee Brockhurst

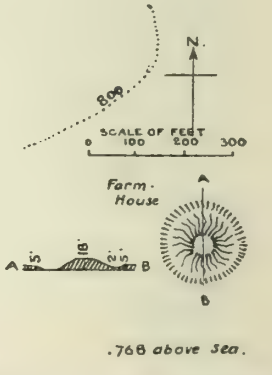



Broadward Hall Mounds, Clungunford

Wilcott, Great Ness

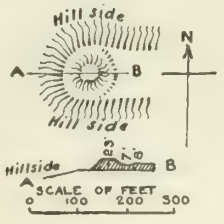



Rabbit Berries, Hopton Castle




Minton, Little Stretton

artificially scarped—rises 23 ft. in height from its western base, but is only 16 ft. on its east, on which side only is left a slight fosse 2 ft. deep. No sign of ingress remains, though it must of necessity have been on the east. The name indicates its use as a burial place ; but its formation does not encourage the idea of a tumulus.




Upper Gwarthlow, Brompton and Rhiston

Bucknell.—' Castle mound,' 5½ miles south-east from Clun, and 400 ft. from Bucknell Church, stands on low ground by the side of the River Redlake. The mount is 13 ft. in height, and the surrounding fosse is but 3 ft. at its deepest part ; this is destroyed on the south, where a barn has been built against the mount.

Chirbury.—At Wotherton, 7½ miles north-north-west from Bishop's Castle, on a tongue of land projecting against a stream, is a small circular mount rising 10 ft. above its fosse, the latter, however, is nowhere deeper than 3 ft. The summit of the mount is level, and 24 ft. in diameter.

Clun.—Bicton Mound, 1¼ miles north-north-west from Clun, stands on ground but a few feet above the River Unk which flows around its northern and western sides. The work has consisted of a mount 8 ft. in height, a fosse with counterscarp of 7 ft., and outer bank 2 ft. high. These are the measurements on the south and most perfect side ; but being composed of gravel it has been easily mutilated and much of it has been carted away.

Clungunford.—A small mount—7½ miles west-north-west from Ludlow, stands on the northern bank of a small tributary of the River Clun. It is 13 ft. at its highest point, and the summit is hollowed to a depth of 4 ft. There is no fosse, nor any trace of such, possibly owing to the surrounding land having been under the plough.

Clungunford.—At the southern extremity of this parish and on the border of the county are two mounds ; one of them is a conical hill of small dimensions of the usual ' mount ' type, the other is now a circular plateau, 125 ft. in diameter at the top, with a low escarpment. Both of these are in the grounds of Broadward Hall, and near to the right bank of the River Clun.

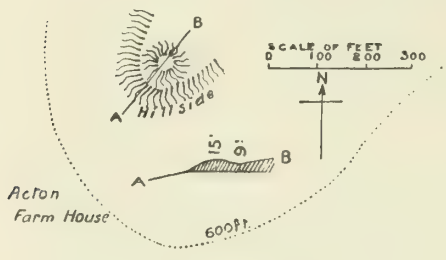
Great Ness.—By the village of Wilcott, 7¾ miles west-north-west from Shrewsbury, a mount is formed out of the northern termination of a bank, a fosse dividing it from the higher land on the south, whilst the other sides are defended by swampy ground through which a stream runs on the north and east sides of the fortification. The mount has a steep escarpment rising 30 ft. above the swamp, and although the summit rises 3 ft. higher on the south the scarp is but 12 ft., descending into the semicircular fosse, which is now filled to within one foot of the outer ground level. The summit is hollowed 6 ft. deep from the southern circular ridge.

Hopton Castle.—Rabbit Berries, 5 miles south-east from Clun. An oval mount 18 ft. in height with a broad and gradual scarp—especially on its eastern side—stands on the northern bank of a small stream. There are no signs of a fosse, which may possibly be due to the surrounding land being under tillage.

Lee Brockhurst.—Two and a quarter miles south-east from Wem is the fragment of a castle mount 9 ft. in height. The greater part is destroyed,

but the traces of its former circumference and its contiguity to the church conclusively bring it within this class.

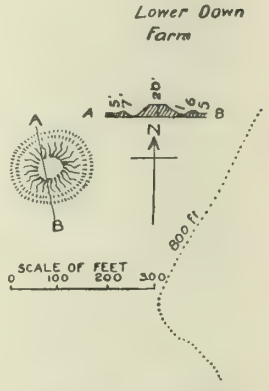
Little Stretton.—At Minton, 2¼ miles south-south-west from Church Stretton, a mount and fosse stand upon a tongue of rock overlooking the Church Stretton valley and the Watling Street. The conical mount is 18 ft. in height, with a level summit 27 ft. in diameter; the surrounding fosse is 5 ft. deep on the north, but is less pronounced as it passes round the southern base.



Acton Mound, Lydbury North

Lydbury North.—Near the Acton Farm-house, 2¾ miles north by east from Clun, upon the extremity of a spur of land stands the remnant of a mount; the whole of it is, however, ploughed over, and its former height is now reduced to 15 ft. on the lower side of the hill; on the higher side towards the north-east it is now only 4 ft. high.

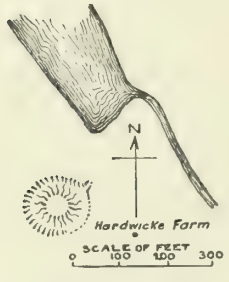
Lydbury North.—At Lower Down, 3¼ miles north-east from Clun, are the remains of a mount and fosse. A few years since it was a well-defined work, but the stones of which it was composed have been taken for road metal and the mount is all but destroyed. Judging from the most perfect part on its western side the mount was 20 ft. high, the surrounding fosse 7 ft. deep, with an outer bank of 2 ft.



The Down, Lydbury North

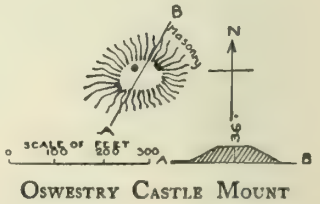
More.—Linley Mound, 3 miles north-north-east from Bishop's Castle. On the right bank of the River West Onny is an extremely small mount, 7 ft. above the ground level. At its northern base is a later scarp for the formation of a fish pond to Linley Hall, thus giving the mount, on this side, a total height of 21 ft.

Norbury.—Hardwick Mount, 4 miles north-east by east from Bishop's Castle. Near a tributary of the East Onny river is a conical mount about 20 ft. in height surrounded by the site of a fosse which is nearly obliterated on the south-east. On the eastern side the counterscarp of the fosse exhibits traces of an outward turn which may indicate the position of a former base court; but it is too indistinct to assert the previous existence of any such court.



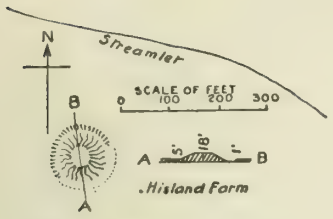
Hardwick Mount, Norbury

Oswestry.—The Castle Mount, on the north-west side of the town, is oval in plan; it is 36 ft. in height, and the level summit measures 96 ft. in diameter from the east to the west, and 63 ft. from north to south. Upon it a few masses of masonry and concrete alone remain of the castle of the FitzAlans which succeeded the earlier stronghold of the lords of Powysland. The mount is now laid out as a park. No sign of a base court remains, but that such previously occupied land to the south of the mount is evident by the place names 'Bailey Street' and the 'Bailey-head.'



Oswestry Castle Mount

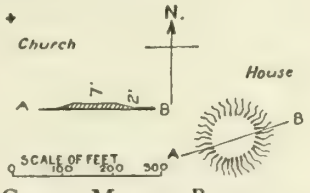
Oswestry.—Hisland Mount, 2¼ miles south-east from Oswestry, is within the township of



HISLAND MOUNT, OSWESTRY

Hisland. It is a small mount 18 ft. in height, with a level summit measuring 39 ft. and 35 ft. on its two diameters respectively. Around its base has been a fosse, visible on the north and west where it is 1 ft. deep; but otherwise it is obliterated: its proximity to a farm-house is accountable for this. A stream flows to the north-east.

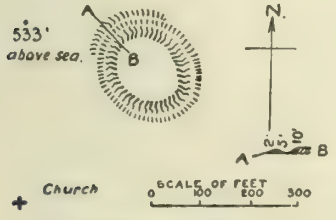
PONTESBURY.—CASTLE MOUND, 7 miles south-west from Shrewsbury. Within a short distance of the church, to the south-east, is a low, flat mount, not more than 7 ft. at its highest, with no trace of a fosse. It is within the garden of a house, and is under cultivation.



CASTLE MOUND, PONTESBURY

PREES.—7 miles north-east from Wem, within the manor of Sandford, granted by William I to Thomas Sandford, and close to Sandford Hall, is an extremely small mount close to a stream which forms a large lake on its western side, and supplies a series of ponds on its north.

RUSHBURY.—4 miles east by south from Church Stretton. In 'Bury Field,' on a slightly elevated ridge north-east of the church, is an almost circular mount, 10 ft. high with a slightly concave summit 140 ft. in diameter. The mount is surrounded by a fosse nearly 30 ft. wide, greatly worn and very shallow except on the north-west where it is 5 ft. deep with a revetment 2 ft. in height. It is situated in the wide valley of Ape Dale, with the Lakehouse Brook and a tributary stream flowing within 500 ft. on the south and east.



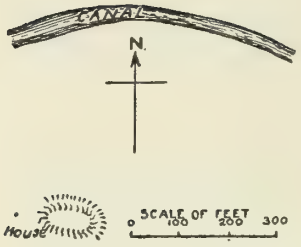
RUSHBURY MOUNT

ST. MARTIN.—OAKLANDS MOUNT, 6 miles north-east from Oswestry, is a small oval mount, 130 ft. long by 75 ft. broad. Half the fosse remains around the northern and eastern sides, but the other portion has succumbed to the domestic requirements of an adjacent house.

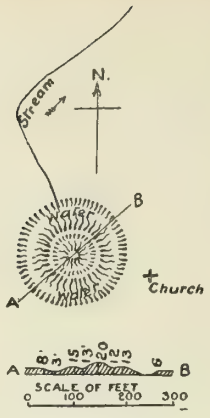
SELATTYN.—CASTELL BROGYNTYN, 1½ miles north-west from Oswestry, is situated in Brogyntyn Park, and traditionally said to have been constructed by Brogyntyn, a natural son of Prince Owen Madre of Wales. It is of great strength both naturally and artificially, occupying a rounded spur of land rising high above its surroundings on the north, west, and east. A circular summit 130 ft. in diameter is surrounded by a rampart 6 ft. in height, the escarpment is 18 ft., and the surrounding fosse 6 ft. deep, outside of which the hill-side provides a natural escarpment. The entrance was at the north-east. The extremely level character of the top has been fashioned to provide a bowling green.

STAPLETON.—Close to Stapleton Church, 5¼ miles south by west from Shrewsbury, is a mount 14 ft. in height, surrounded by a fosse from 3 ft. to 4 ft. deep. The work stands partly within the churchyard and partly in a pasture, the division is marked by a wall and ditch passing through the mount, which has caused it to be badly mutilated.

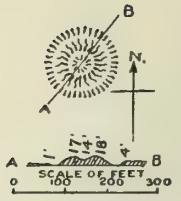
WEM.—WEM CASTLE, 10 miles north from Shrewsbury, the head of the barony held by William Pandulph, is unknown to the natives, and the



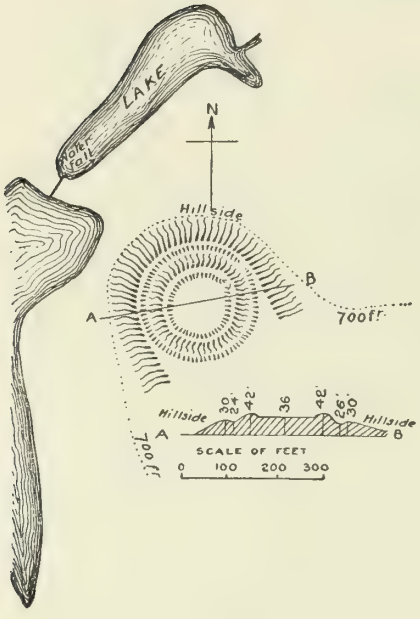

Oaklands Mount, Sr. Martin



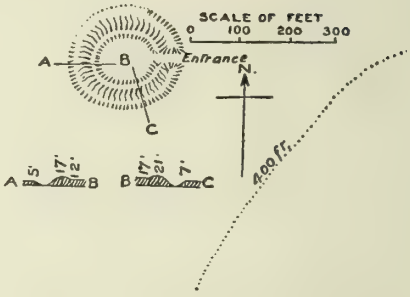

West Felton Mount



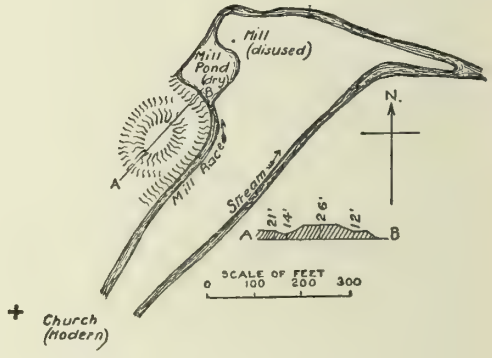

Weston Mount



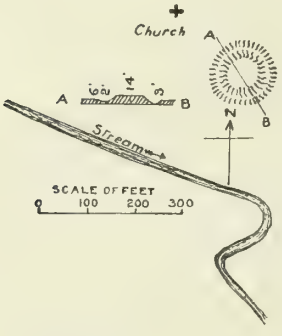

Brogyntyn Castle, Selattyn



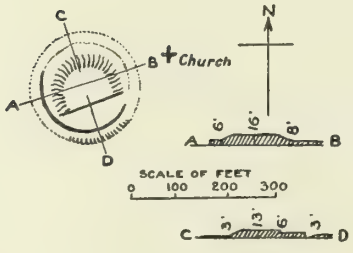

Hawcocks Mount, Westbury




Yockleton Mount, Westbury




Stapleton Mount




Wem Castle

Walk Mills, Castle Hill, Woolstaston

remaining mount unrecognized as the site of a stronghold, portions of the work standing on various properties which here unite. The remains consist of three parts of a mount 10 ft. in height, around its base runs a platform which was in turn surrounded by a fosse, of which a very small part remains on the south, where it is 3 ft. deep. The walls, both straight and curved, as delineated on the plan, are modern. The position was strengthened by the waters of the Roden on the south, and a tributary of that river on the west.

WESTBURY.—HAWCOCKS MOUNT, 9 miles west-south-west from Shrewsbury, is situated on ground gently sloping towards the east. The mount has an escarpment from 17 ft. to 21 ft. in height, the top being ramparted by a breastwork 5 ft. high. The fosse is 7 ft. at its deepest part on the south, but at the north-west it has been destroyed. The entrance was at the east.

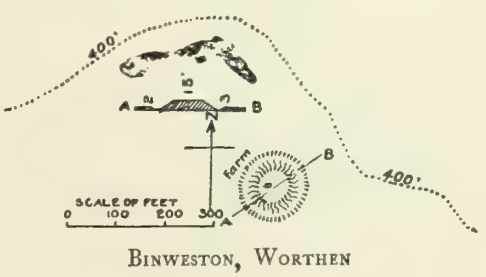
WESTBURY.—YOCKLETON MOUNT, 5¾ miles west by south from Shrewsbury, is situated to the north-east of the church and close to a stream. The mount is oval, the summit being 75 ft. on its long, and 53 ft. on its short axis, standing 14 ft. above the base of the fosse, the latter, 7 ft. deep, exists only from the north round the west to the south; around the base of the other portion is another scarp 12 ft. high, with a mill race flowing at its foot.

WEST FELTON.—4¼ miles south-east by east from Oswestry is a curiously formed mount, double ditched. The rounded summit, 20 ft. above the base of the work, is surrounded by a fosse 8 ft. below its apex; the fosse is from 1 ft. to 2 ft. deep, and beyond its outer bank is an escarpment of 13 ft. into another fosse 6 ft. deep, the diameter of the base of the entire work being 170 ft.

WESTON and WIXHILL under REDCASTLE.—THE MOUNT stands upon a slight knoll, north of Weston and 3¼ miles east from Wem. It is 18 ft. in height, with a basin-shaped summit 4 ft. deep; around the base of the scarp is a fosse 4 ft. deep towards the north-east, but at the opposite side it is filled up to within a foot.

WOOLSTASTON.—CASTLE HILL, 3½ miles north by east from Church Stretton, is of so unusual a formation that it is doubtful whether it was not originally a sepulchral mound adapted to military purposes at a later date. It is an oval mount with evenly curved slopes rising to a height of nearly 20 ft. at the apex of its rounded top. The base, 270 ft. on its long axis and 150 ft. wide, is surrounded by a narrow flattened terrace, but exhibiting no escarpment other than the very gradual decline of the ground. It appears to be wholly artificial, almost entirely composed of reddish sand with gravel around the bottom. It is situated near Walk Mills, by a stream draining from the Night Shell, and a streamlet runs past its south-eastern base.

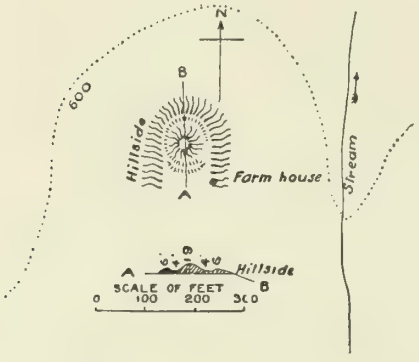
WORTHEN.—At BINWESTON, 5¼ miles east-south-east from Welshpool, is a mount and fosse; the former is 15 ft. in height, and the latter varies from 2 ft. on the west to 3 ft. deep on the east. The summit is occupied by an old farmhouse.



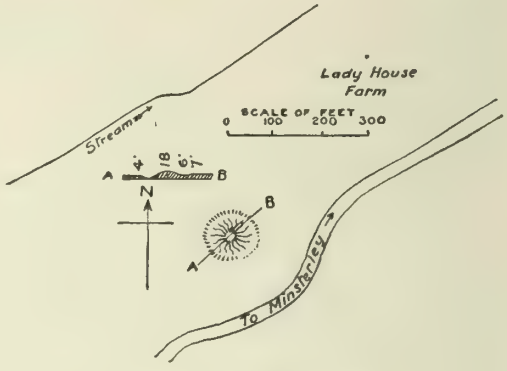
BINWESTON, WORTHEN

WORTHEN.—Upon a spur of rock jutting northerly from a group of hills 6½ miles east-south-east from Welshpool,

near Bromlow, is a small mount and fosse. The situation gives it a certain amount of natural protection on all but the southern side, and a stream flows 300 ft. to the east. The mount is the solid rock scarped, 15 ft. high from the fosse, which is 2 ft. in depth. Around the headland the slope of the hill provides the outer scarp; but on the south, where the spur is connected with the higher land, the bank outside the fosse is 6 ft. in height. An entrance was formed at the south-east between the outer vallum and the hill-




Bromlow Village Farm, Worthen




Lady House, Worthen

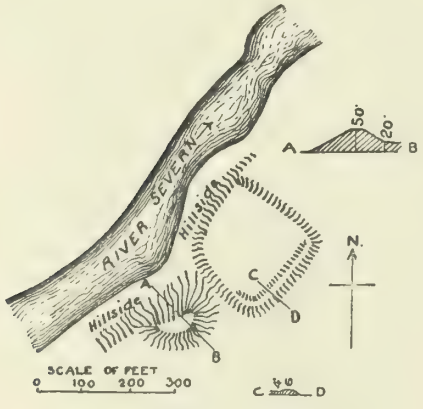
side. The Ordnance Survey record that this is a tumulus is contradicted by the very nature of the mount, which is undisturbed rock, whilst the suffix to the local name may not apply to this exact spot.

Worthen.—Near Lady House, 8 miles north by east from Bishop's Castle, a small mount and fosse stand on low ground between Minsterley on the south-east, and a stream on the north-west. A rounded mount, 18 ft. in height, has been surrounded by a fosse which is now nearly obliterated on the south-eastern side, but is still 4 ft. deep on the south-west.

## MOUNTS WITH ONE OR MORE ATTACHED COURTS

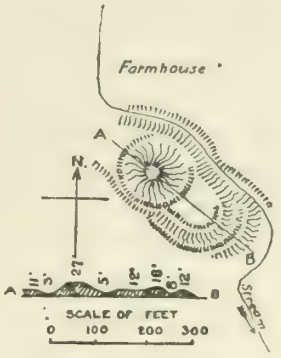
### [Class E]

Alberbury with Cardeston.—At Little Shrawardine, 6¼ miles west-north-west from Shrewsbury, and nearly a mile south of the site of the Fitz Alans' castle, is a mount and bailey earthwork. Situated on the southern side of the River Severn, the waters of which wash round the north-western base, it occupies a strong position, commanding the water-way of Welsh raiders. The mount is of an irregular form, standing 30 ft. above the ground level and 50 ft. above the river. The bailey, on the north-east, is a quadrangular plateau, 4 ft. above the level on the south-east but descending by a far steeper escarpment on the north-west to the river; a rampart is left on the southern angle and the south-eastern side only. The fosse between the mount and the bailey has been utilized as a rough road down to the river.




Little Shrawardine, Alberbury

Bettws-y-Crwyn.—The Moat, situated on the northern bank of the River Teme, 7 miles west of Clun, is on the extreme border of the county. The bank on which the work is constructed is 20 ft. above the river ; the mount, 24 ft. in height, is surrounded by a fosse 8 ft. deep, except on the north-east, where the counterscarp is destroyed. The mount stands at the north-west of a stilted semicircular court of small dimensions ; the greater part of the latter has a rampart 6 ft. in height with a scarp 10 ft. deep into a fosse 4 ft. deep. This fosse does not communicate with the ditch of the mount, but beginning at the south side of it—from which it is separated by a vallum—it continues around the bailey and the whole north-eastern side of the combined works, widening at the east to receive the termination of an outer vallum—with a scarp of 12 ft.—which protects the south-easterly extremity of the court. A small stream has been conducted through the large fosse by which the original ends of the counterscarp have been displaced.



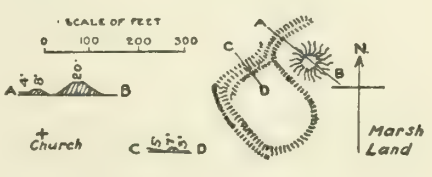
The Moat, Bettws-y-Crwyn

Brompton and Rhiston.—At Brompton Mill, 5¼ miles north-west from Bishop's Castle, is an earthwork badly mutilated by the making of a mill pond, which was, however, insufficient to destroy all the marks of the original plan. A conical mount with a small level summit stands 26 ft. high upon a platform scarped in an ingenious manner to provide a defensive spur on the opposite side of the mount to that of the bailey ; the latter, of horse-shoe plan, is divided from the mount by a fosse 6 ft. deep, but the old course of the mill stream has destroyed the work to too great an extent to decide how far this fosse was continued round the base of the mount. The eastern side of the court has been dug away for the pond and its former defensive works are unknown ; but, standing on the north bank of the River Caebitra which here marks the Welsh border, and on the line of Offa's Dyke—a portion of which it destroyed—it must have proved a valuable fortification.

Brompton Mill

Chirbury.—At Hockleton, 5½ miles south-east by south from Welshpool, and a short distance north-east from Chirbury, a small work of this class stands 33 ft. above the River Camlad, flowing on the east side ; this position and the steep fall of the land gives the fort an importance beyond that its size warrants. It is a small rounded mount 20 ft. in height, with no fosse, but with a diminutive court on the north-east now consisting only of a semicircular platform.

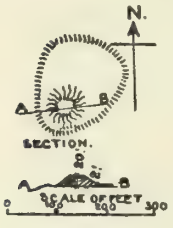
Chirbury.—Marton, a village 3½ miles north-east from Chirbury, has a small motte castle naturally strong from the character of its surroundings. It stands on the edge of a fen which stretches for a considerable distance in an easterly direction, while the River Rea



Marton, Chirbury

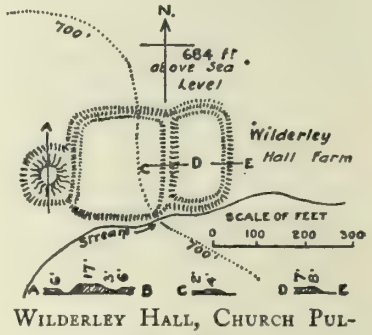
and the Hailsford Brook contribute towards its defence; the west is its weakest point. The mount, 20 ft. in height, has a flat summit 15 ft. in diameter. From the north to the west a vallum, 8 ft. high from the fosse and 4 ft. from the exterior, curves around the base of the mount until it joins a curvilinear quadrangle forming a court on the south-west; this is a plateau with no rampart except on the north-west where a continuation of the afore-mentioned vallum crests its edge. This vallum rises 4 ft. from the bailey and falls with a 7 ft. scarp into a fosse 5 ft. deep, which latter continues along the south-western side. That side abutting on the marshland apparently depended on the inaccessible nature of the ground, as no traces remain of either vallum or fosse.

CHIRBURY.—Quite close to the south-east of MARTON is Wilmington, where another small castle is situated. Upon a slight knoll 130 ft. above the fens is a bailey of pear-shaped plan, now only a low platform with a fragment of a 5 ft. rampart at its narrow southern end, which probably surrounded either the court or the mount. The latter stands within this end of the bailey and independent of its circumvallation; it is 20 ft. in height with a steep escarpment, and a flat summit 18 ft. in diameter.

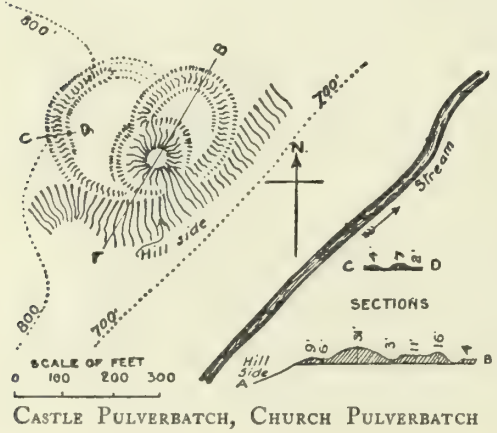


WILMINGTON, CHIRBURY

CHURCH PULVERBATCH.—Adjacent to WILDERLEY HALL FARM, 7½ miles south-south-west from Shrewsbury, are a mount and two quadrangular courts. The mount, 17 ft. in height, with a level summit, is surrounded by a fosse 6 ft. deep on the north but filled to within 3 ft. on the south. This stands entirely outside the bailey, and the fosse of the mount—otherwise circular—is straightened on the east where it abuts on the side of the court. The first court is square and the second, yet farther towards the east, is of the same length as the first, but narrower, approaching a parallelogram with rounded corners. That nearer to the mount has a rampart on all sides but the south, while the second—at a lower level than the first—is surrounded by a vallum with an escarpment of 8 ft. on the east; the lateral vallum dividing the two courts is 2 ft. high on the west and 4 ft. on the east. A fosse, open to that around the mount, continues round the north-west angle and the northern side of both courts. The least defended side on the south is naturally strengthened by a brook flowing at the base of the escarpment.



WILDERLEY HALL, CHURCH PULVERBATCH



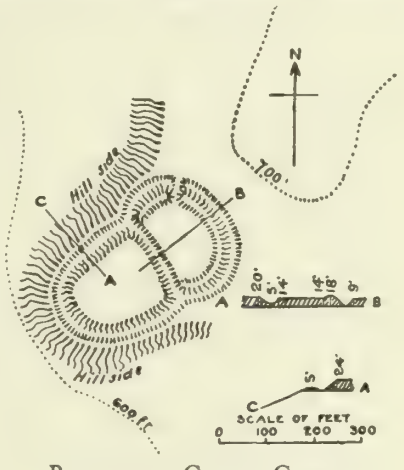
CASTLE PULVERBATCH, CHURCH PULVERBATCH

CHURCH PULVERBATCH. — CASTLE PULVERBATCH, 7½ miles south-south-west from Shrewsbury, stands on a promontory of rock 100 ft. above a stream. The mount, 28 ft. above its fosse, has a rounded summit, and is encircled by a ditch except at one point on the south-west which appears to be a modern

mutilation. This mount stands on the circuit line of the bailey, which is of horse-shoe plan situated towards the north-east. Raised 8 ft. above the fosse of the mount the base court is defended by a rampart 5 ft. high—now lost at the south—with an escarpment of 16 ft. into an outer fosse 4 ft. deep; the latter communicating with the fosse of the mount at the ends of the diameter of the latter; and from the western junction of the ditches a bank surmounts the western counterscarp of the circular fosse.

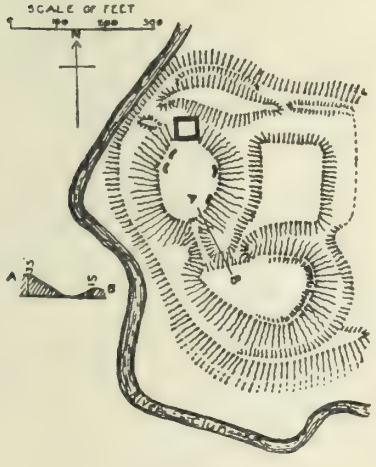
To this early work a second bailey was added around the entire west side, it also is of the horse-shoe plan, and although obliterated at the north the remaining part shows a defensive rampart 5 ft. high with a counterscarp of 7 ft. into a fosse 4 ft. deep.

Church Stretton.—Brockhurst Castle occupies the southern point of a ridge 100 ft. above a stream flowing on the west. Between the foot of the steep slope on the west and the stream is a stretch of marshy ground, the southern and eastern slopes are more gentle, and on the north a sunken way curves round the ridge of rock from the north-west, gradually rising until it enters the 'castle' on the north. This approach is guarded by an outer bank at its lower part but is open to the missiles of the defenders as it nears the works. The earthworks consist of two courts divided by a ditch into unequal parts; the north-eastern area is 6 ft. above the outside level, and the south-western area is 5 ft. higher than the first.




Brockhurst Castle, Church Stretton

The first court—a little more than semi-circular—has a rampart nearly 4 ft. high, except on the side of the dividing ditch; the escarpment is 19 ft. high, and the counterscarp 9 ft. is open to the natural level. The second court shows no signs of a rampart; the escarpment is 24 ft. high, while the counterscarp of 5 ft. creates an outer bank on the edge of the declivity of the hill. The dividing fosse is 7 ft. deep in the middle, assuming greater depth as it joins the encircling fosse, and is nearly 40 ft. wide. In 1892 there remained in the fosse a few blocks of hewn stone retaining fragments of mortar, witnesses to the mediaeval castle that occupied these mounds before the middle of the thirteenth century.



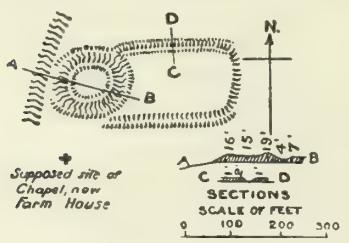

Clun Castle

Clun.—The Castle.—Immediately below the junction of the Rivers Clun and Unk, on the eastern side of the town, Clun Castle is in a position to command the two valleys. The mount and its two courts are curiously formed on high ground within a quadruple bend of the river. The mount, 35 ft. in height above the fosse on its north and east, is defended only by the scarp of the hill and the river on the west. A causeway bridges the mount with the first bailey; this is of kite-shaped plan 33 ft. above

the fosse which surrounds it on all but the western side, where the scarp of the hill and the river are sufficient defence ; the fosse which begins on the south has a counterscarp 15 ft. in height. This court has been surrounded by a breastwork, of which about half remains. On the northern side of the first bailey another causeway gives access to the second bailey of rectangular plan, 20 ft. above the fosse, this shares the fosse of the other works on the west and south, but on the east it has been destroyed. Along the northern side of the mount and second bailey is an agger which has been mutilated ; north of the bailey it is 12 ft. in height, but rising higher towards the west it forms a bold mass of earth opposite the mount, and on the far side remains the fragment of a fosse on the edge of the hill-side. Another fragment of a bank is incorporated with the mount at the north-west.

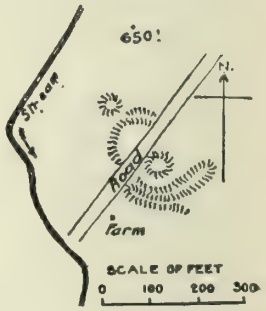
The massive square keep of Fitz Alan's Castle has been built into the northern side of the mount, with its foundations imbedded in the natural ground, whilst upon the artificial mount are the remains of a shell keep, with access from the second story of the heavier building.

DIDDLEBURY.—At CORFTON, 4¼ miles north-east from Craven Arms, stands a mount wholly artificial, the summit of which is surrounded by a rampart 4 ft. in height at its most perfect point ; the escarpment is 16 ft. in height, and around its base is a fosse 3 ft. deep which, however, has been destroyed on the west where the ground gently slopes. The bailey is a parallelogram extending directly eastwards of the mount and embracing one-third of the circular fosse. The defences of the court are greatly worn and partially destroyed ; originally they apparently consisted of a rampart and fosse, but on the south the fosse only remains ; on the east the scarp of the court may be seen, and on the north only are the former works extant, though now almost levelled. Here the rampart is 1 ft. high and the fosse 2 ft. deep.



CORFTON MOUNT, DIDDLEBURY

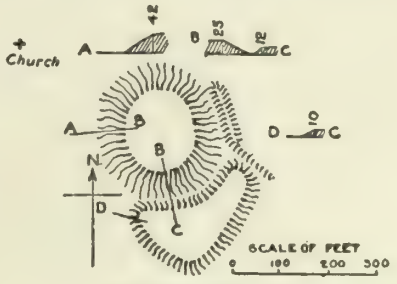
DIDDLEBURY.—Close to MIDDLEHOPE FARM, 12 miles north-east from Craven Arms, are the fragments of a work mutilated almost beyond recognition by a road passing through its midst and the degradation inseparable from its contiguity to the farm. A small mount stands within the former circuit of a moat, of which the southern portion is most clearly to be seen, and outside this part is a fragment of a vallum. Another small mound is outside the northern side of the moat. A stream flows near its western side.



MIDDLEHOPE, DIDDLEBURY

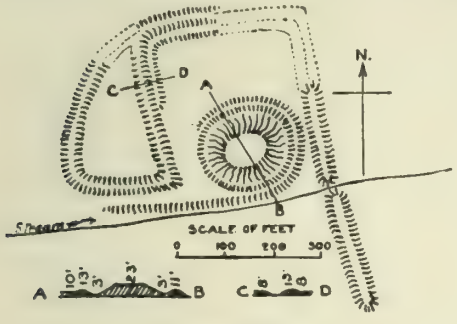
ELLESMERE.—ELLESMERE MOUNT, nearly 8 miles north-east from Oswestry, is the only monument commemorating the once powerful border castle that occupied this site. No remains of the keep of Roger de Montgomery are to be seen, and the top of the castle mount is now a bowling green. The mount is of great size, a natural knoll with a scarp 42 ft. in height on its western side, which has no other defence. On its southern side the escarpment is 25 ft. with a fosse 12 ft. deep separating it from a curiously-shaped base court situated on this side. The latter,

a plateau 10 ft. high, tapers as it extends around the south-east, where it is bounded by another fosse branching from the mount. On the eastern side the fosse is topped by a bank for a length of 125 ft., beyond which the works end. There are indications of a second bailey towards the west, and the importance of the castle warrants the assumption that the earthworks were more extensive than at present; but the indications mentioned are too limited for any assertion.



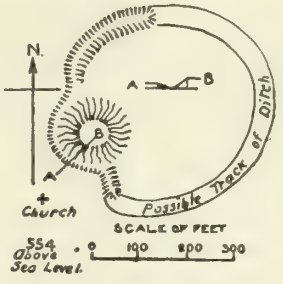
ELLESMERE MOUNT

HODNET.—HODNET CASTLE, 5¼ miles south-west by south from Market Drayton. The mount of this castle is of unstable earth and appears to have subsided; it is now 20 ft. above its fosse, which is 10 ft. deep on the north. Except on the west a bank surmounts the edge of the fosse, which, from 3 ft. on the north, increases in depth as it curves towards the south, and there continues, 11 ft. high, along the northern bank of a stream. This early mount no doubt had one or more courts, but the present lines of entrenchments certainly represent a later age. The mount now stands in a quadrangular court of an imperfect vallum and fosse, at point C—D the former is 13 ft. high and the latter 8 ft. deep. The stream forms the southern side of the court, and on the south bank is an extension of the eastern vallum. Another irregular court, bounded only by a moat, is attached to the western side of the first bailey.



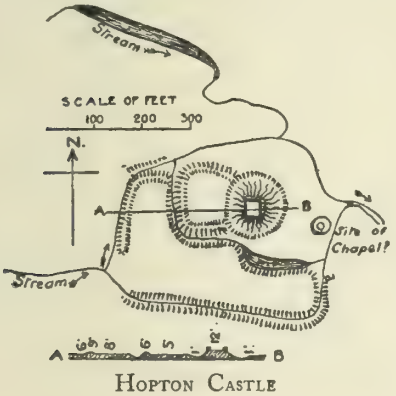
HODNET CASTLE

HOLDGATE.—HOLDGATE (or HOLGATE) CASTLE, 7 miles south-south-west from Much Wenlock, the site of the castle of the Norman Helgot, retains but a small portion of its entrenchments. The base court appears to have been almost circular in plan, depressed on the west, in the middle of which side was a semi-circular projection of the cincture as it inclosed the mount within its area. The mount, steep and conical, has no sign of a surrounding ditch, but the fosse formerly bounding the bailey here curves around the western base of the mount.



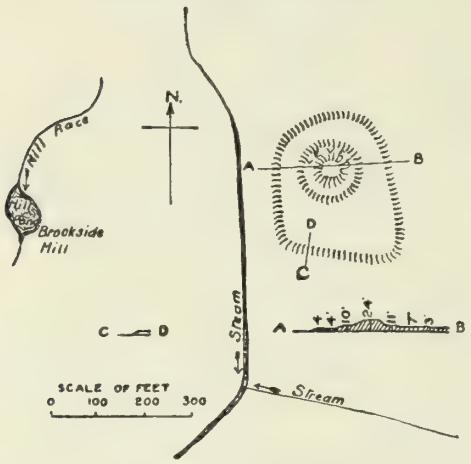
HOLDGATE CASTLE

HOPTON CASTLE.—HOPTON CASTLE is 4¾ miles east-south-east from Clun. The works of this early stronghold, the Opetune of Domesday, are still distinct from the additions of a later generation of the de Hopton family. A ruined keep occupies the summit of a mount 12 ft. high, with its own fosse now only 1 ft. deep; on the west a small court is surrounded by a rampart 1 ft. high, the two ends of which abut on the mount fosse at the north-west and south-west respectively. On the west and



HOPTON CASTLE

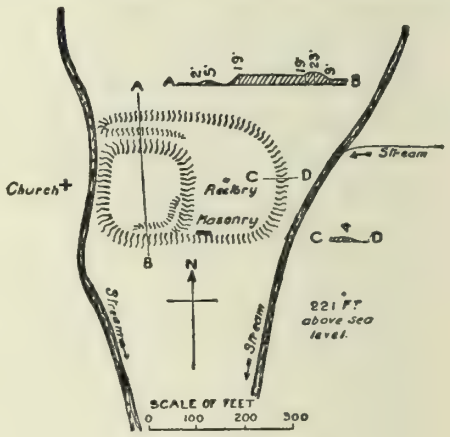
south this rampart has an escarpment of 6 ft. into a fosse with a counterscarp of 8 ft. The unusual feature of an outer work rising higher than the inner is due to the more extensive defences of a later age. The additional court, large and irregular, lies to the west and south of the first, and is surrounded by a moat—partially destroyed—with a low rampart on its western side and northern angle. The works stand in the middle of a field, traversed by a brook, by which the moat was supplied with water.



Belan Bank, Kinnerley

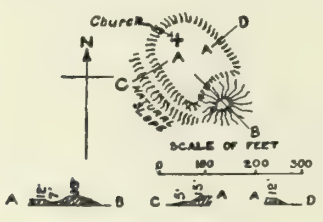
Kinnerley.—Belan Bank, 6½ miles south-south-east from Oswestry. Standing within the circuit of a bailey, towards the north of the area, is a double mount. Rising from the level of the court, with no protecting fosse, from 4 ft. to 6 ft. high, is a circular platform in the midst of which rises a smaller mount 14 ft. high, with a level summit. The court, semicircular on the north around the mount, extends in a southerly direction and assumes an almost rectangular form 5 ft. above the natural level. All the defences here are scarps only ; but, considering its position overlooking the confluence of two small streams, and the valley of the Vyrnwy, it is probably much reduced from its original strength, and its court and mount terrace possibly had their own ramparts.

Knockin.—Knockin Castle, 5 miles south-east by south from Oswestry, was the scene of repeated feuds. The large oblong mount is 19 ft. high on the north—its steepest side—where there is a fosse 5 ft. in depth. The semicircular court lies to the east and, like the mount, is surrounded by an escarpment only. The masonry of L'Estrange's 'Castle of Cnukyn' has been removed, save a fragment of the curtain wall on the south, which we may reasonably presume surmounted the crest of the escarpment ; by this arrangement no earthen rampart was required. The bank at the south-east angle of the summit of the mount is modern. The position of the castle was greatly strengthened by two streams which flow at the base of the scarp on the western and eastern sides respectively.



Knockin Castle

Little Ness.—The whole top of a small hill—6¾ miles north-west from Shrewsbury—100 ft. above the River Perry, has been utilized as a castle site. The work consists of a very small mount, 19 ft. high from the south-east slope of the hill, divided from the rest of the knoll by a fosse 5 ft. deep which, however, does not surround the mount

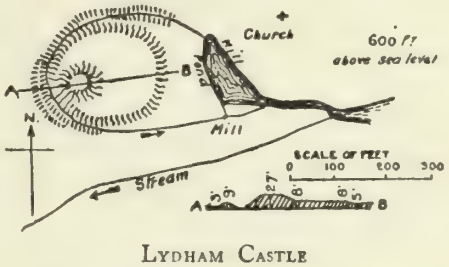


Little Ness

but extends only the width of the court. The rest of the hill-top forms the court on the north-west of the mount, its only defence being an artificial scarp, leaving a narrow terrace on the south-western slope of the hill. A church has been built within the cincture of the court.

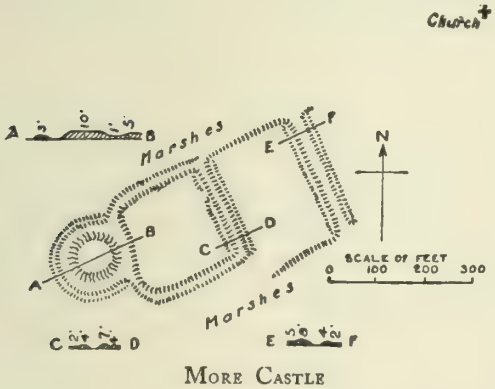
LUDLOW.—LUDLOW CASTLE occupies an ideal site upon the highest portion of high ground above the junction of the Rivers Teme and Corve. The verge of the rocky steep forms the defence on the north and the west, but on the other sides of this summit, open to assault, a formidable fosse swept from edge to edge. Another fosse, taking the same course, protected the courtyard ; but the fosse of the outer ward is now filled up. These earthworks are wholly mediaeval, most probably the work of Roger de Lacy, and will be found described in another chapter of this History.

LYDHAM.—LYDHAM CASTLE, 1½ miles north-north-east from Bishop's Castle. Here a small conical mount is situated at the western end and within the oval bailey. It has no distinctive ditch, but rises 19 ft. above the level of the court; on the west side the scarp of the mount is continuous with that of the bailey, thus giving it a total height of 27 ft. The bailey is surrounded only by a scarp on rather more than half of the eastern side with the addition of a fosse 9 ft. deep round the semicircular western half, where a portion of an outer bank, 6 ft. high, remains for a length of 160 ft. On the north a portion of the fosse is continued in an easterly direction, and points to the former existence of an outer bailey, now destroyed, but its circuit is traceable in the mill-stream and outer bank of the pond around the east until it rejoined the first base-court on the south.



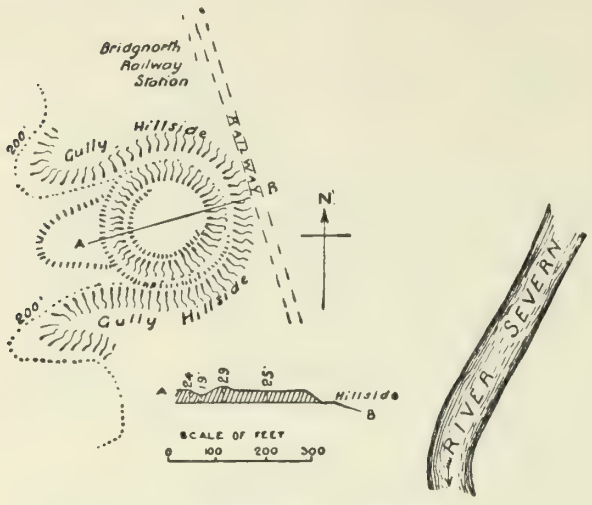
LYDHAM CASTLE

MORE.—MORE CASTLE, 2 miles north-north-east from Bishop's Castle, is a mount and double bailey, with the remains of a possible third court. Like the plan at Wilderley, these various works succeed each other in a straight line ; to the west is the mount 10 ft. high, with a wide flat top, surrounded by a fosse from 3 ft. to 4 ft. deep, with an outer bank of the same height except towards the east, where the base-court is situated. The latter is quadrangular, with no rampart except on its far side where it is 2 ft. high ; the fosse that surrounds this joins the fosse of the mount. A ditch 4 ft. deep separates the two courts with a counterscarp of 7 ft. to the top of a bank 4 ft. above the second court. The latter is rectangular with a scarp only on the northerly and southerly sides, but it has a bank 3 ft. high towards the east, with a scarp 8 ft. high, and a counterscarp of 4 ft., where a bank of 2 ft. crests the edge of a possible third court. The whole work lies in a swamp, the only firm ground lying on the north-east towards the church, and owing to this the clay soil has subsided, obliterating some of the lines of defence.



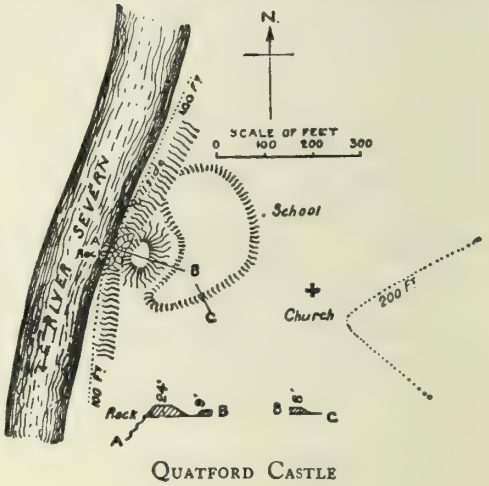
MORE CASTLE

OLDBURY.—PANPUDDING HILL, on the western side of the River Severn, in the 'Lower Town' is a fortified hill. The position stands 130 ft. above the river; it is a natural mound, circular in formation on three of its sides, artificially scarped. Naturally defended by the fall of the hill on the north, east, and south, the strongest entrenchments lie on the western side; here the fosse is 5 ft. deep, but on the north-east it has perished, leaving a terrace on the side of the hill. From this terrace the mount rises 25 ft., the crest is three parts surrounded by a rampart 4 ft. in height, which was probably carried all round in its original perfection. On the west side is a small bailey commanding the narrow portion of the hill, now marked solely by an escarpment. The base of the eastern side of the hill has been quarried to make a road for the railway.



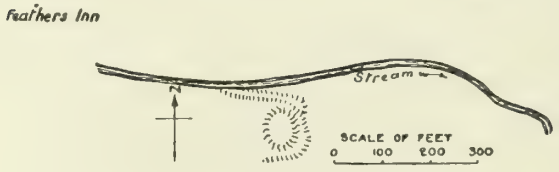
PANPUDDING HILL, OLDBURY

QUATFORD.—QUATFORD CASTLE, 2 miles south-east from Bridgnorth. Upon a precipitous rock overhanging the River Severn, and 80 ft. above it, is a mount 24 ft. in height above the fosse, 9 ft. deep, which surrounds it on all but the river side. The bailey, on the eastern side, is very irregular in plan, approximating to a horse-shoe form, but buildings have encroached upon the site, and all that is left to mark the position of the court is a scarp, 8 ft. high at its highest point. This work overlooks and completely dominates the ancient ford of the Severn.



QUATFORD CASTLE

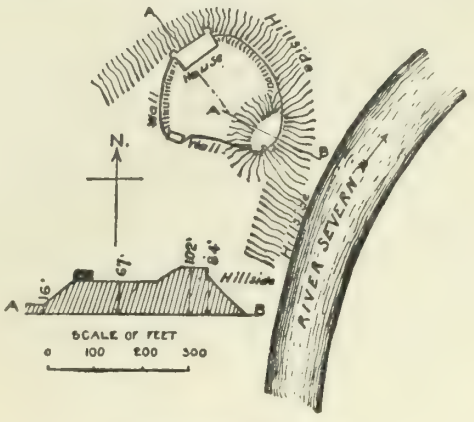
SHIPTON.—At BROCTON, 4¾ miles south-west from Much Wenlock, on the south bank of a stream, is a small work consisting of an oval mount within the eastern fragment of a bailey; the latter has now perished except at this part, where it forms a fosse on the east of the mount with a vallum extending from the north-east, along the north-west, to the stream, a length of nearly 200 ft.



BROCTON, SHIPTON

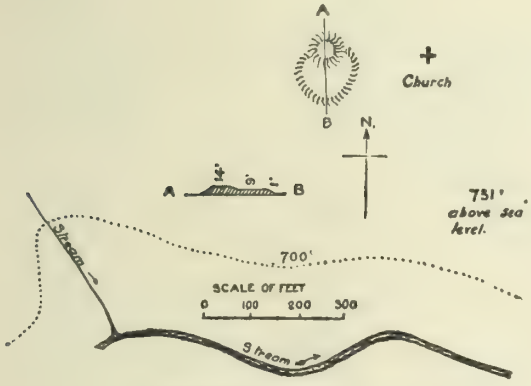
SHREWSBURY.—SHREWSBURY CASTLE. Fully to grasp the strategical position of the castle it is necessary to observe the situation of the town, which occupies a peninsula of rising ground surrounded by the River Severn except on the north, where the windings of the river so nearly approach each other that the isthmus is only 900 ft. in width. Upon this isthmus the

ground rises precipitously above the eastern bend of the river to a height of 67 ft. At the south-eastern corner of this hill-top is an artificial mount 35 ft. in height, and oval in plan, the scarp of which merges into the scarp of the hill on the east. The top of the hill provides the bailey, around which a large portion of the low vallum remains supporting the foundation of the wall constructed by Roger de Montgomery.



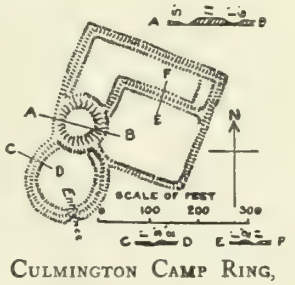
SHREWSBURY CASTLE

SMETHCOTT.—8½ miles south by west from Shrewsbury. Near to the west side of the church is a very small mount and bailey of the same plan as that at Hockleton, in Chirbury parish, though somewhat larger. The mount is on the north of a heart-shaped bailey, with one-third within the circuit of the latter; it rises 5 ft. from the level of the bailey, but has an escarpment 14 ft. high where it rises from the ground level. The mount is circular with a table top, and has no fosse; the bailey, also, has but a scarp 8 ft. in height, with no signs of either rampart or ditch. A stream with a small tributary flows on the south and west sides.



SMETHCOTT MOUNT

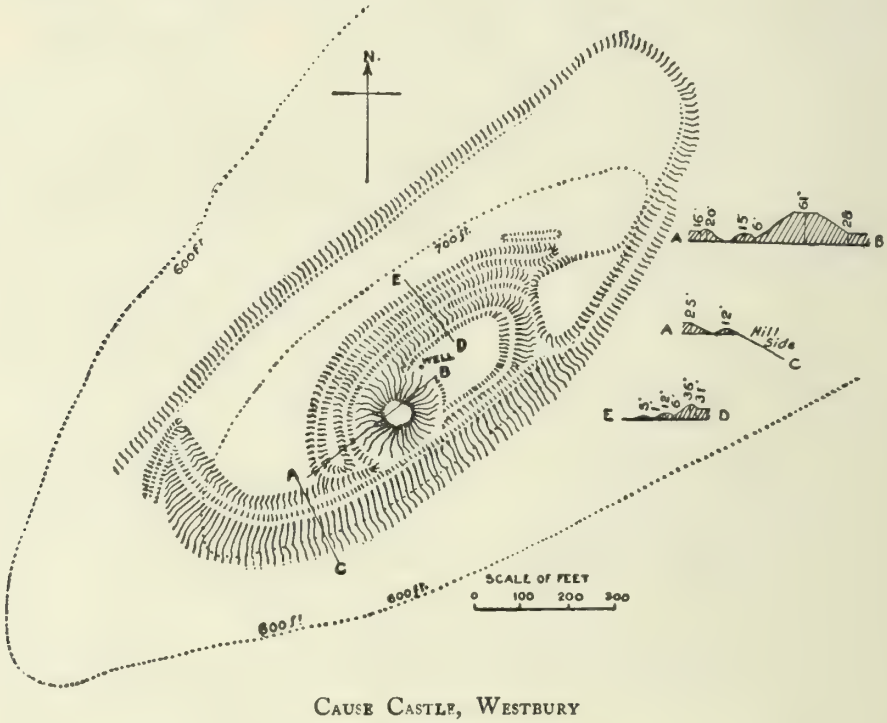
STANTON LACY.—CAMP RING, CULMINGTON, 4 miles east from Craven Arms. The original mount and bailey is still quite distinct although attached to other and later works. The mount stands 11 ft. above its surrounding fosse, which is 5 ft. deep, with no exterior bank. A circular bailey lies to the south, the fosse surrounding it, 1 ft. deep, enters the fosse of the mount at the south-east and south-west, while the rampart rises 2 ft. above the interior area. This work is situated in the fork of two rivers, the Corve, and the Pye Brook, a short distance above their junction, which probably determined the place of entrance on the south. The later works consist of two rectangular courts, together covering one square area to the north-east of the mount; this is surrounded by a moat opening into the fosse of the mount on the north and the fosse of the bailey on the east. The northern angle and adjacent sides of the southern square court have a rampart; and the same angle and sides of the northern L court are similarly treated, while at the eastern interior is a wide depression. The whole of these latter works have been under the plough, and 2 ft. is now the greatest height or depth of banks or moats.



CULMINGTON CAMP RING, STANTON LACY

WESTBURY.—CAUSE CASTLE, 9¾ miles west by south from Shrewsbury. The hill upon which this stronghold stands is 180 ft. above the River Rea,

flowing at the north-western side, and the whole of its summit is occupied by the works of Roger Fitz Corbet. The mount on the south-eastern limit of the site rises 55 ft. from the base of the fosse surrounding it, except at the north-east, on which side is the bailey, where the dividing fosse is shallow and extends but half the width of the court. This inner bailey is 30 ft. above the fosse which is a continuation of that around the mount; but the vallum as now seen around the bailey is no earthwork, it is the grass-covered ruin of the masonry which surrounded the entire crest of the court; the remains of a shell keep occupy the summit of the mount, and a well within the court—fashioned with dressed stone—ensured a constant supply of water. Around this lofty citadel and its fosse is a vallum varying from 8 ft. on the north-west to 18 ft. on the south-west, and 12 ft. on the south; girdling the works except on the south-east, where the fosse finds an exit and continues on

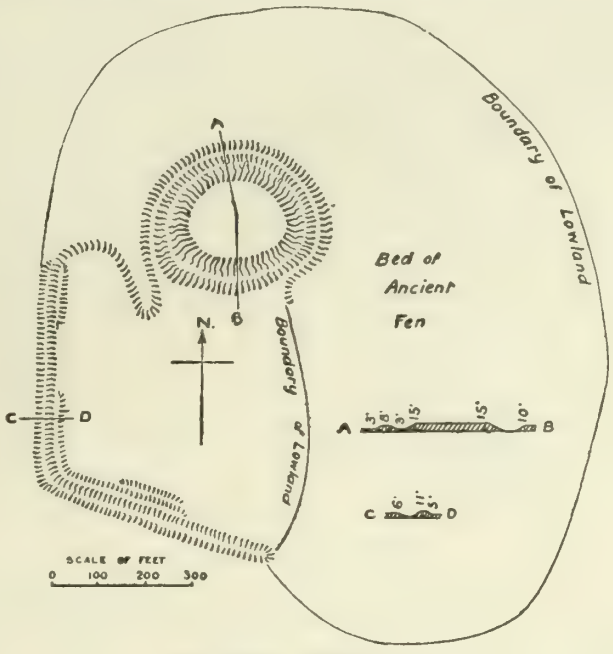



Cause Castle, Westbury

either side around the outer court. A second fosse and vallum passes from the entrance on the north, to the south, at which point the former is 20 ft. deep and is confined within a bend of the inner and outer vallum, constituting an exceedingly strong defence. The entrance on the north is between an elongation of the vallum and a broad platform which here attains 18 ft. in height. Outside the vallum at this point is a low agger about 150 ft. long. An extensive court spreads over the north and south-western area, capable of safeguarding herds of cattle, formerly surrounded by an earthen rampart, though now destroyed at the northern extremity by farm buildings and a pond. At the south-western corner is a sunken road with an agger 6 ft. high on its western side leading to the ruins of a massive gateway.

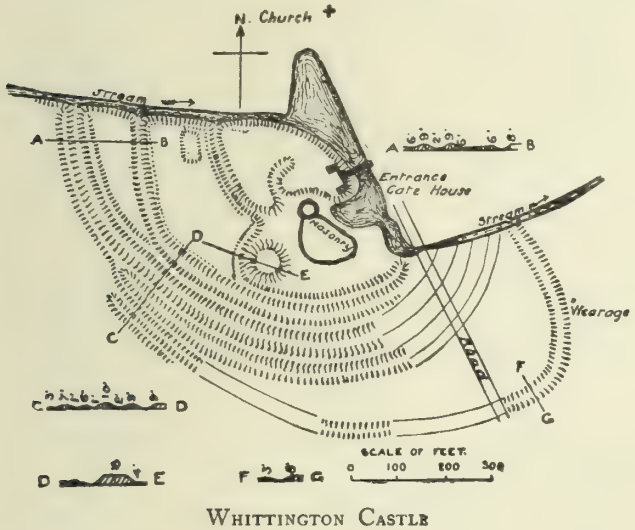
Whitchurch.—Pan Castle, fully 1 mile south-west from the town of Whitchurch which is in the most northerly point of the county. The end of a bank jutting out into a fen has provided the foundation for a mount, thus naturally protected on all sides but the south. The mount covers a large area,

rising 15 ft. to a level summit ; it is surrounded by a wide fosse 3 ft. deep on the north and 10 ft. on the south facing the bailey ; this has an outer bank 5 ft. in height around it except on the side of the court, which is defined by the continuation of the outer scarp of the bank. The court is irregularly square, with a curious inroad of the fen on the north. Towards the firm ground on the south and west, where an assault would be easily made, is a fosse 6 ft. deep, with, at intervals, the remains of an inner vallum 11 ft. high. Due south is a short length of fosse inside the rampart. Half a mile to the west flows the Red Brook.



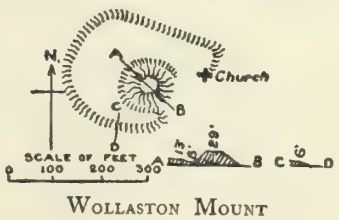

PAN CASTLE, WHITCHURCH

WHITTINGTON.—WHITTINGTON CASTLE, 2¼ miles east-north-east from Oswestry, is of the mount and bailey type, with extensive alterations adapting it to the later mediaeval castle, at which period it was belted by a maze of moats. The mount is 18 ft. in height, and the original bailey was apparently to the north-west, when its north-eastern borders were safeguarded by a morass. At some subsequent period—probably when the property passed into the Fitzwarine family in the early thirteenth century—the erection of strong works of masonry necessitated a re-arrangement of the ground. A strong fortress rose from the marsh, and a triple arc of shallow ditches extended around its southern bounds ; and a fourth, taking a wider curve, inclosed a broad area. When the gate-house was erected another cutting allowed water to surround the greater part of the site upon which it stood. Within one section of the court an ancient fish-pond remains. The ground upon which these works remain is open to the tread of cattle and the sports of youth, by which rampart and fosse are gradually being levelled, and preclude an adequate estimate of their former strength.




WHITTINGTON CASTLE

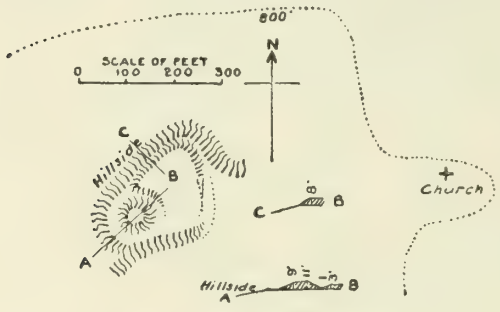
WOLLASTON.—WOLLASTON MOUNT, 10 miles west from Shrewsbury. This conical mount, small




WOLLASTON MOUNT

in area, has a steep escarpment rising 29 ft. above the lowest part of its base. The fosse, 5 ft. deep, does not appear to have ever completed the circle, but to have been open to the country on the east. The bailey, but faintly marked by a scarp only, almost encompassed the mount, curving around its base, leaving only the narrow open space already mentioned. The present church is built upon the north-eastern part of the base court, which is partially destroyed at this point.

Woolstaston.—Castle Bank, 3 miles north from Church Stretton, also known as 'Castle Hill,' is situated 600 ft. west of Woolstaston church, upon a hill of gentle slope, which, nevertheless, provides a position dominating a wide stretch of country. The mount, at the south-west of the bailey, is 10 ft. at its highest point above the fosse, with its summit—now very uneven—nearly 30 ft. in diameter. The fosse around the base has largely perished, the deepest part is 2 ft. at the north-east, otherwise it is flattened above the outer scarp of 6 ft. The base court has been partially governed in its formation by the shape of the hill, and only two sides of the northern angle remain, the other portion having been obliterated. The extant boundary is traced only by the scarp; but there are signs of other scarps on the north-east. Close to the south-eastern part of the work runs a sunken road, a continuation of the Port Way, and another trackway branches past the south-western side.



Castle Bank, Woolstaston

## HOMESTEAD MOATS

### [Class F]

Acton Scott.—A semicircular portion of a moat remains at Alcaston.

Alberbury with Cardeston.—At White Abbey Farm, formerly a part of an Alien Priory, a cell of Grandmont in Limousin, two fragments of the original moat are extant.

Alberbury with Cardeston.—Around Wattlesborough Hall are three sides of a square moat with the southern side extended towards the east.

Alveley.—At Pool Hall, near Dodsgreen, are the remains of a circular moat, which has now lost much of its original form.

Baschurch.—In the wood at Stanwardine is an oblong moat, it varies in width and is bridged at the north-west angle.

Baschurch.—Two lengths of a rectangular moat, entirely lost at the south-west angle, are in a field to the east of Hadnall.

Bitterley.—Fragments of a circular moat remain at Lower Cleeton, one mile south-west from Silvington.

Bridgnorth.—The site of a moat is on the east of East Castle Street.

Bromfield.—A rectangular moat lies to the west of the ruins of a Benedictine Priory, a cell to St. Peter's Abbey at Gloucester.

CHERRINGTON.—Three parts of a broad moat remain at the Manor House, the south-eastern portion has gone.

CHESWARDINE.—A rectangular moat, with the south-west angle more than double the average width, surrounds the site of a castle at Cheswardine.

CHETWYND ASTON.—The north-eastern side of a moat, with its two angles, is at the Manor Farm.

CHIRBURY.—A square moat lies south-west of Middleton, and to the east of it are slight remains of an embanked pond.

CLAVERLEY.—About one mile north-east of the village is a square moat with the northern side open to a small lake.

CRESSAGE.—The curved fragment of a moat lies to the south of the Old Hall.

DONINGTON.—Around the site of Humpheston Hall three sides of an oblong moat are extant.

Another, almost square, moat of smaller area lies near the west of the former.

EARDINGTON.—An irregular oblong moat, with an excrescence at the south-west, is bridged on the eastern side.

ELLESMERE.—In a field at Gadlas is an oblong moat.

ELLESMERE.—At New Marton Hall is a moat approaching an oblong in plan, encircling a site with rounded angles.

ERCALL MAGNA.—At High Ercall a moat is attached to the seventeenth-century mansion. The banks have been destroyed in places, but the site is marked by the channel which fed the moat with water.

ERCALL MAGNA.—On the east of the River Roden, one mile west of Long Waste is a narrow moat surrounding an oblong area.

GREAT NESS.—At Startlewood, Hopton, the mutilated remains of a moat still almost surround an area approximating to a square.

GREET.—At 'The Bower,' one mile west of Rockhill Mill, are two fragments of a moat, the northern part is an arc of a circle, the southern a rectangle.

HADNALL.—A rectangular moat of narrow proportions surrounds Hadnall Hall, with the entrance on the west.

HODNET.—In a field three-quarters of a mile east of Marchamley Wood is a square moat.

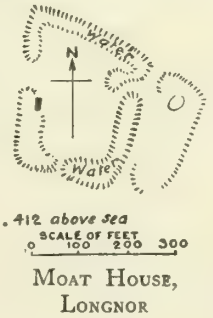
HODNET.—At Hawkstone Farm are the remains of a circular moat.

HOLDGATE.—Near to the Castle Mount, and on a farm where is preserved a fragment of an ancient castle, are the remains of a moat.

IGHTFIELD.—At Lea Hall three sides of a square moat remain.

IGHTFIELD.—A broad moat is at Ightfield Hall, surrounding an oblong area with rounded angles.

LONGNOR.—South-east of the village, at the 'Moat House,' is a moat with three entrances, that on the east curves between a former external pond and an incurved branch of the northern side of the moat.



MOAT HOUSE, LONGNOR

MIDDLE.—An almost square area, containing the remains of a castle of masonry, is surrounded by a water moat; it is of uniform width on three sides, but the eastern side is wider and its two angles attain a breadth of 60 ft. The

entrance is on the west. From its relative position to the church, and the masonry-banked platform on the interior site, it would appear to have been planned in a manner transitional from the mount and bailey to the moated homestead.

Milson.—An angular fragment of a moat survives in the rectory grounds.

Moreton Say.—To the south-east of Middle Morrey is a broad square moat.

Much Wenlock.—A moat is at Woodhousefield, south-east of Bourton.

Munslow.—About half of a circular moat remains at Thonglands.

Newport.—At Upper Bar, south of Newport, is a fragment of a square and broad moat.

Petton.—Within the eastern borders of Petton Park is an oblong moat, with the entrance in the middle of its long north-western side.

Pontesbury.—At Panson, a quarter of a mile south-east of Great Hanwood, is a small circular moat.

Pontesbury.—Moat Hall, south of Panson, is nearly surrounded by a circular moat.

Pontesbury.— Half a mile east of the Moat Hall is a narrow rectangular moat.

Prees.—In a field north of the village of Corra is a square moat, which is considerably wider at its southern angle than its normal width.

Prees.—In the grounds of Cloverley Hall a moat of irregular width surrounds an area almost square.

Prees.—Portions of three sides of a square moat remain at Moat House.

Prees.—A small square moat is at Faulsgreen village.

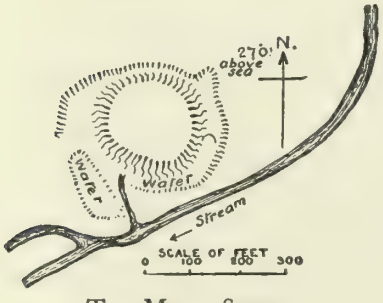
Ruckley and Langley.—The remains of an extensive moat to an ancient Hall at Kenley.

Shawbury.—East of the church are three sides of a quadrangular moat.

Shifnal.—Between the Grange on the south, and the Grange Colliery on the north, half a mile north-west of Redhill, is an oblong moat.

Shifnal.—In a field on the north of the railway, and east of Naird Lane, is a small but broad moat.

Shifnal.—Inclosing a circular area, but with its outer banks very irregular, is a moat with a varying width from 50 ft. to 90 ft. It is, however, greatly worn at the south, and here a narrow channel conveys water from the mill-stream flowing on the east and south.



The Moat, Shifnal

Shifnal.—Another small moat is at the Manor House, half a mile from the last mentioned.

Shrewsbury, St. Mary.—A quadrangular moat remains at Harlescott House.

Silvington.—The northern side and north-west angle of a moat remain at Silvington.

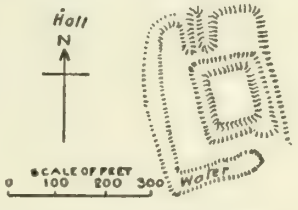
STAPLETON.—Only the northern side of a small moat, known as the 'Lower moat,' is extant three quarters of a mile south-east of Stapleton.

STOCKTON.—At Oldpark, on the east of the River Severn, one mile west of Norton, a moat of oval form was formerly fed by two streamlets.

UPTON CRESSETT.—At Upton Cressett Hall about half of the original moat remains.

UPTON MAGNA.—One mile south-west of Withington is a square moat, with the north-eastern side extended in an easterly direction for a distance nearly equal to the length of one of its sides.

WEM.—To the east of Newtown, and close by the new Northwood Hall is the site of the ancient mansion with the moats in a fairly good condition. The quadrangular area is surrounded by a moat, projecting to a greater width at the south-east corner. Around this, embracing a larger area, are the remains of another moat; the outer bank has gone on the north and east, but the west and south still exist. On the northern side are two curious inlets, approaching close to the inner moat; when the outer bank was perfect these would be inclosed and possibly provide two fish-ponds.



NORTHWOOD HALL, NEWTOWN, WEM

WEM.—LACON HALL moat, two miles north-east from Wem, is a mere fragment.

WEM.—The Moat House, three quarters of a mile south-east of Bakers Green, retains but a very small section of its former moat.

WESTBURY.—At Newton, south of Stoney Stretton, is a small square moat in good condition.

WHITCHURCH.—Around the site of the monastic hospital there remains the greater part of an irregular square moat.

WHITCHURCH.—West of Moretonwood is a narrow moat of irregular oblong plan.

WHITTINGTON.—At Pentre-Kenrick is a very small circular moat.

WHITTINGTON.—In a field north-west of Old Park Hall is a small oblong moat.

WOLLASTON.—A short distance to the west of Wollaston is a moat very nearly circular in plan.

WOORE.—SYLLENHURST MOAT, oblong in form, widens into a small lake on the north side, and on the south it apparently extended around an adjacent square area.

WOORE.—South of Bearstone village is a rectangular moat with the bridge on the western side.

WORTHEN.—At Aston Rogers three parts of a round moat surround the 'Pond House.'

WORTHEN.—At Binweston is a triangular moat formed against a bend in a stream from which it obtained the water.

WORTHEN.—A short length of a moat is at Hurst.

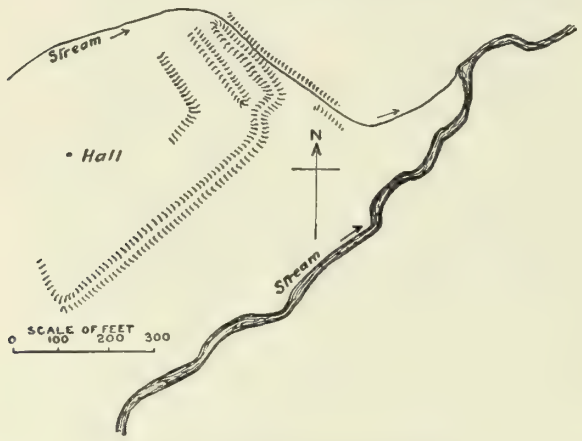
WROCKWARDINE.—CHARLTON CASTLE, three and a half miles west from Wellington. This, like the work at Middle, appears to mark a transitional period, when the mount type of castle was giving place to the moated

homestead ; but, pertaining more to the latter, it comes within this class. A rectangular site stands 12 ft. above the base of the moat which is from 5 ft. to 7 ft. deep. Fragments of ancient masonry remain in various spots.

## MOATED INCLOSURES WITH ADDITIONAL DEFENCES

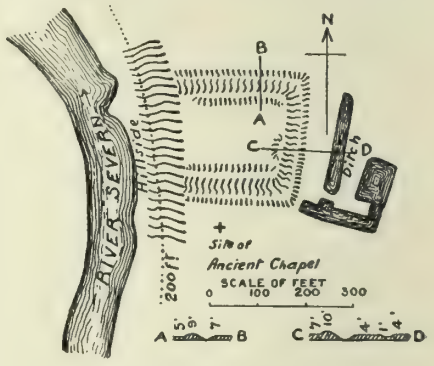
### [Class G]

Acton Burnell.—Immediately across the stream, north-west of the church, a wide moat surrounds a small square area, and on the south-western side is a strong outer bank which slightly bends around the angles at the two extremities of that side of the moat. This, like the works at Middle and Wrockwardine, appears to be a transition from the mount and fosse type to the homestead moat.




Langley Hall, Acton Burnell

Acton Burnell.—Langley Hall is now represented by a farmhouse, but around its precincts are the remains of its former defences. A fragment of the scarp of its house and garden platform remains at its eastern corner. At a distance of 100 ft. from its north-eastern side is a length of the inner bank to a ditch, but the outer bank extends from this spot around the long south-eastern side and its southern angle. Outside this bank on the north-east are portions of the moat through which flows a narrow stream to its junction with a rivulet. The probable course of the moat may be traced by the bed of the small stream along the north-western side.

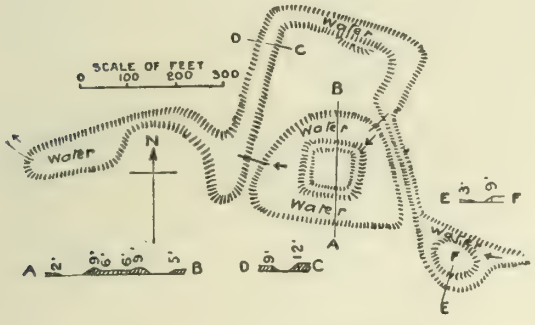



The Isle, Bicton

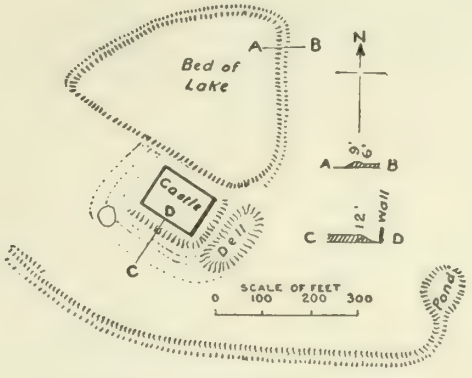
Bicton.—The Isle, 3¼ miles north-west from Shrewsbury. A tongue of land is here surrounded by a bend in the River Severn except on the south where the isthmus is less than a quarter of a mile broad. Upon the west side of this natural inclosure, with the bank of the river—56 ft. high—forming one side of a quadrangle, is a dry moat inclosing the other three sides ; it is from 4 ft. to 7 ft. deep, and on its inner side a bank 9 ft. high externally providing a rampart averaging 6 ft. from the interior. The rampart is nearly perfect on the north and south, but nearly gone on the east. Parallel to the eastern side are a shallow ditch and two fish-ponds. The position and construction of this work suggests a mediaeval adaptation of an earlier camp.

Diddlebury.—Cortham Castle, 6½ miles south-east from Church Stretton. Between the River Corve on the west, and the Pye Brook on the east, is a small square area surrounded by a rampart 3 ft. high, with a scarp

of 9 ft. to the water of the moat, or encircling water, for the plan of it is altogether at variance with the recognized form of a moat. On all sides but the south is an outer moat which, in its circuit, incloses a courtyard on the north and appears, by a fragment on the northern side, to have been strengthened by a rampart. On the south-east, where the moats are fed by water from the Pye Brook, the moat widens so as to surround a small oval mound 9 ft. in height; and on the west the excavation takes an eccentric course supplying curves and broads the object of which is obscure.




CORTHAM CASTLE, DIDDLEBURY




CHENEY LONGVILLE CASTLE, WISTANSTOW

STOKESAY.—STOKESAY CASTLE, south of Craven Arms, is a picturesque mansion of the Ludlow family surrounded by a moat which averages 22 ft. wide. It is now drained but preserves all its original features.

WISTANSTOW.—CHENEY LONGVILLE CASTLE, 6 miles south by west from Church Stretton. The castle of masonry stands within a moat, half of which is now destroyed; outside this are indications of banks and an outer moat with a fish-pond on the south-east. On the north-east an embanked lake formed the chief defence, while the south was strengthened by a rampart and ditch, the eastern curve of the latter terminating in a pond, and the western extremity probably continued until it abutted on the lake.

## MISCELLANEOUS EARTHWORKS

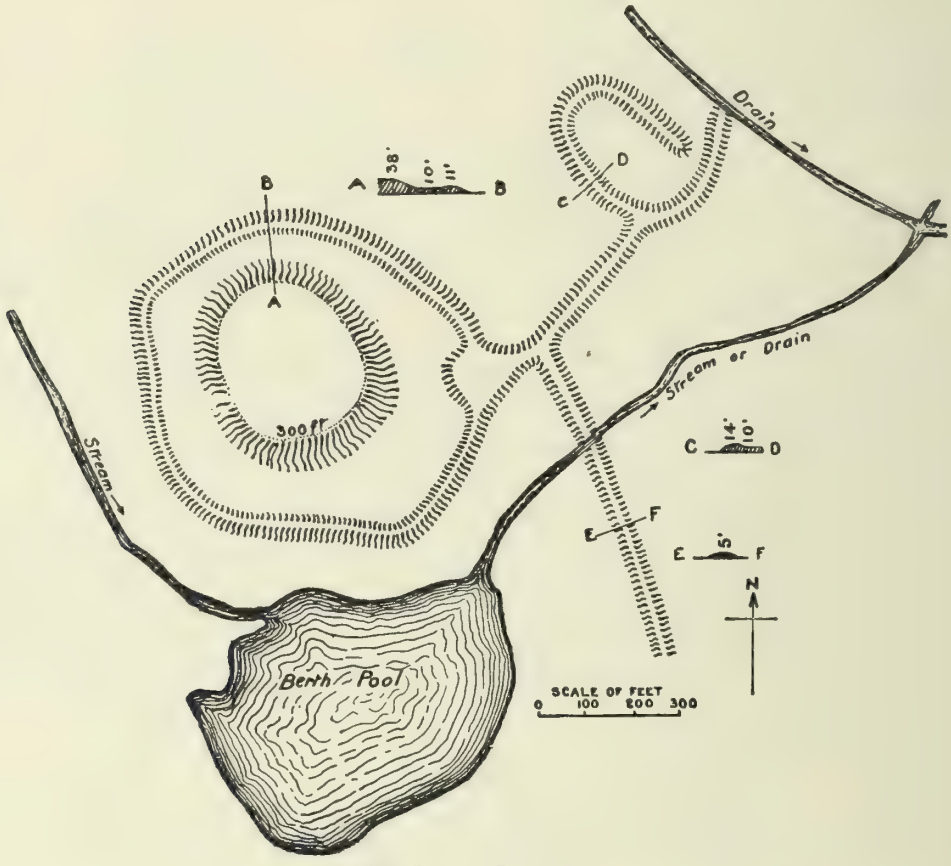
### [CLASS X]

ALL STRETTON.—On the slope of Novers Hill an approximately square area—150 ft. square—is entrenched with a small bank and ditch. The north and east sides are right angular, the west is slightly curved; but the noticeable feature is on the south, where the entrenchment rounds the angle from the west and continues to curve into the centre of the area when again turning on to itself—thus forming a small mound—it returns to the south and bends towards the east, which side it joins at a right angle.

ALL STRETTON.—At High Park, on the north-east of the Longmynd, a vallum and fosse take a straight course for about 700 ft. from the north to the south across a spur of the hill, the southern end then curves eastwards above the stream in Jonathan's Hollow and is lost in the scarp of the hill. The north end apparently continued beyond its present termination until the

position was supported by the marsh in the lowland at Dead Man's Batch. The work consists of a vallum now not exceeding 5 ft. in height at its most perfect point, with a fosse barely 3 ft. deep on its western side; by which it is evident an antagonist was looked for from the west, and no doubt this, with other similar works arranged in the same manner, were for the protection of the Church Stretton valley.

Baschurch.—The Berth, 6 miles south-west from Wem. These curious entrenchments are formed on low ground, by nature a swamp, but now more or less drained. The surface to the north and west is rather higher than on the south-east, otherwise it is generally of the same height. The position is defended on all sides in the immediate neighbour-

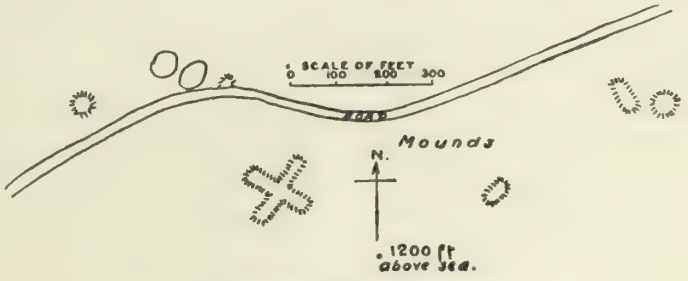



The Berth, Baschurch

hood by the swamp. The work appears to consist of a natural island, or perhaps two islands, more or less entrenched by art, connected with one another by a causeway, which continues south-south-west across the swamp to some firm land. The actual spots where the causeway joins the two inclosures are in a state of chaos, but appear to have existed somewhat as shown on the plan. The larger inclosure is a flat court within which is a large mound 28 ft. in height, and around the court of irregular circular plan a low vallum 1 ft. high remains. At the eastern side a platform apparently defended the entrance from the causeway. The smaller inclosure is oval, and surrounded by a vallum rising 4 ft. from the interior with a scarp 14 ft. in height; at the eastern side an entrance is between the end of the north-east vallum and the protruding end of that on the south-eastern side. The

discovery, in close proximity to the works, of a large bronze vessel which Mr. Reginald Smith, F.S.A., of the British Museum has suggested as an ancient British timekeeper, is noteworthy.

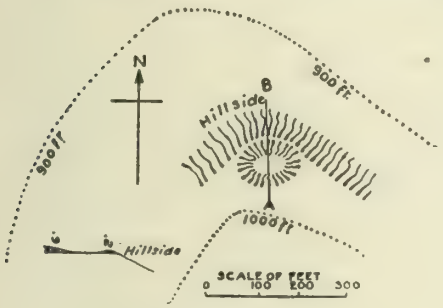
CHIRBURY.—On Middleton Hill, 3 miles east by north from Chirbury, is a group of eight mounds, three circular, three oval, one oblong, and one in the form of a Greek cross, the purpose of which has not been ascertained.



MIDDLETON HILL, CHIRBURY

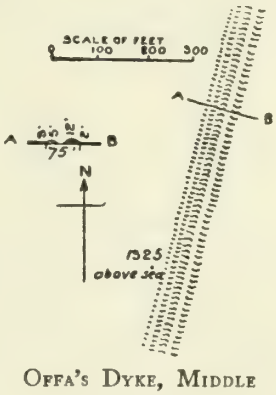
CLUN.—'BICTON DITCHES,' ¾ of a mile north-west from Clun. On a tongue of land towards the junction of the rivers Unk and Clun and 20 ft. above their waters is a small plateau scarped to a height of 12 ft. on the north, while two parallel ditches run along its southern side. It is apparently of late date, possibly used by the Parliamentary troops when besieging Clun Castle.

CLUN.—Upon a projecting angle of land at Lower Rockhill, ¾ of a mile south from Clun, and 400 ft. above the River Clun, is an elliptical hollow 6 ft. deep from its southern border and 2 ft. from the bank on the crest of the hill.



LOWER ROCKHILL, CLUN

CLUN and other parishes. OFFA'S DYKE.—The CLAWDD OFFA or OFFA'S DYKE, locally called the Devil's Ditch, is a huge boundary work of vallum and fosse which extended for 100 miles from the Clwyddian Hill, north of the River Wye, to Caedwn, near Mold. It enters Shropshire from Knighton, and taking its way through the parish of Llanvair Waterdine, past Newcastle, it leaves the county 4½ miles west of Bishop's Castle to re-enter it across the parishes of Brompton and Chirbury, it then leaves for Wales and again enters Shropshire near Llanymynech and passing west of Oswestry finally leaves the county near Chirk. The portion in this plan, 4½ miles north-west by north from Clun, has an outer bank; the measurements are—on the Saxon side it rises 10 ft. and with rotund curve descends 12 ft. into a fosse with a counterscarp 5 ft. high, the outer bank being 3 ft. above the level; the width of the work is 75 ft. Throughout its whole sinuous way, over hill and dale, the fosse is on the west or British side.



OFFA'S DYKE, MIDDLE KNUCK

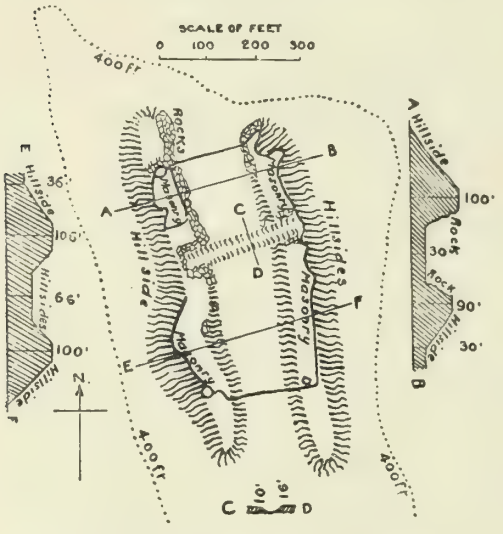
LITTLE STRETTON.—A straight length of vallum and fosse with a direction from north to south is on the east of the Longmynd, about one mile west of Church Stretton. Only a short length remains in a fairly perfect condition south of a road which has cut through it; north of the road the material has been removed for repairing roads. This fragment is situated above the Devil's Mouth Hollow,

the vallum is worn, and the ditch—on the western side—is nearly filled in, but its former strength may be gauged by its width of 20 ft.

Little Stretton.—Across the narrowest part of a ridge between Ashes Hollow and Callow Hollow, about one mile west of Little Stretton, an entrenchment 600 ft. long has a course from north-east to south-west. The vallum is now only 4 ft. above a shallow fosse which lies on its western side, but the width of the work is 20 ft.

Oswestry. Watts Dyke.—This dyke of vallum and western fosse runs parallel to Offa's Dyke for a certain distance about three miles to the east of it. It would appear to be an earlier work than that bearing the name of Offa, and is attributed to the Britons by various authors, but the position of the ditch points to an anticipated raid from the west. Hên Dinas, or Old Oswestry, is built upon the line of this dyke.

Weston and Wixhill under Redcastle.—Red Castle, 3¾ miles east from Wem, is a curious work formed out of two narrow ridges of rock, apparently chosen as a foundation for a castle of masonry. A fosse, or ravine, divides the work into two parts on the summit of the hill, the sides of which vary from 100 ft. to 60 ft. in height. A ditch 10 ft. deep has crossed the ravine at right angles; and on the height of the ridges are remains of masonry.



Red Castle, Weston and Wixhill

Worfield.—About two miles outside Bridgnorth, as the Stourbridge road takes its way along the side of the hill, are strong lines of entrenchments on the northern side; these curve to the south and are cut through by the road. They are most perfect towards the north, and there present—uppermost on the hill—a trench 18 ft. deep; the vallum—facing the road and the valley—with an escarpment 20 ft. high, a trench 2 ft. 6 in. deep, a scarp to the lower vallum of 18 ft., a trench 6 ft. 6 in., and the third and last vallum with a scarp of 6 ft. on to the present road, which was probably made within the lowest fosse and destroyed its counterscarp in the making. These great trenches are far from the ridge of the hill and yet high above the valley which they command to a great distance.

Wroxeter.—5 miles south-east from Shrewsbury. Here was the site of the Roman station of Uriconium or the Viroconium of Ptolemy, on the eastern bank of a curve in the River Severn, upon the great military road from London to North Wales, and also on the ancient border road. Destroyed by the Barbarians about the middle of the fifth century, it has been left for the present age to trace the circuit of the city walls, and to discover that they were invested with a rather shallow fosse.

## TUMULI

All Stretton.—On the west side of Little Caradoc is a tumulus 50 ft. long east and west, and 14 ft. broad, of very low elevation.

Bettws-y-Crwyn.—In a field a quarter of a mile north-east of Anchor.

Bishop's Castle.—A tumulus is at Colebatch.

Boscobel.—6 miles east from Shifnal, on the extreme eastern border of the county, is a small mound which may possibly be a tumulus.

Bromfield.—A tumulus lies in a field between the River Corve and the high road from Much Wenlock to Knighton.

Chirbury.—At Rorrington is a small mound adjacent to a farm-house which has taken its name—The Mount Farm—from this hillock, which is probably a tumulus.

Church Stretton.—On the highest point of Cothercott Hill is a circular tumulus 66 ft. in diameter, with a gently rounded contour nearly 7 ft. in height. One on Duckley Nap, and another to the south-east of it are known as 'Robin Hood's Butts,' another lies near the footpath to Little Stretton. Three tumuli are on Grindle Nills Hill, north-west of Callow; the most northerly is on the actual summit, circular in plan, and 40 ft. in diameter, but it is only 18 in. high; the second, to the south, is oval with the major axis 50 ft. long, and the minor 40 ft., with a height of 4 ft.; the third 600 ft. south-west of the last, is circular with a diameter of 36 ft., and a height of 4 ft. On Yapsell Bank is a circular tumulus 40 ft. in diameter; and another near the bank 12 ft. in diameter.

Clun.—'The Crugyn,' near Newcastle, is a small mount 10 ft. in height, probably a tumulus.

Clungunford.—Tumuli lie to the west of the River Clun. The partial exploration of one is described by Mr. Hartshorne,[6] and more extensive research was made on its southern side by the Rev. T. Owen Roche about the year 1840. Two strata of wood-ashes were found, and many fragments of rude pottery, some of which were of the Norman era.[7]

Cressage.—A tumulus lies near to the railway.

Little Wenlock.—Three barrows are situated south-west of Willow-Moors.

Lydbury North.—A tumulus is at Eaton.

More.—A tumulus is situated 1 mile west of Norbury.

Myndtown.—On Briarholt Hill, on the Longmynd, is a circular tumulus 66 ft. in diameter, with a fairly steep slope 3 ft. high, and a flat top. Close to the west side of the Portway, between the Huxter Stone and Black Knoll, is an oval tumulus 60 ft. long and 45 ft. broad, with a height of 2 ft. 6 in. North-east of the last are two tumuli, the southerly is circular, 60 ft. in diameter and 4 ft. high with a flat top; the other, an oval, is 90 ft. long and 50 ft. broad, and has a flat top containing two hollows. In the same parish, on Synold's Hill, east of Asterton, is a circular tumulus 40 ft. in diameter and 2 ft. high.

Petton.—A tumulus is in the Park.

[6] *Salopia Antiqua*, 102.

[7] *Journ. Brit. Arch. Assoc.* xix, 317.

RATLINGHOPE.—On the Longmynd a tumulus lies west of the Portway, 900 ft. north-west of Wildmoor Pool; it is almost circular, 60 ft. in diameter and 5 ft. high. Two others lie to the south on the ridge of the hill.

RUSHBURY.—One tumulus remains in this parish.

ST. MARTIN'S.—A tumulus is in the grounds of Oaklands south of Chirk Bridge. A small mound, 'Pen y Bryn' at Glyn Morlas, 80 ft. in diameter, is situated on a raised point of land on the verge of the valley of the Dee.

WELLINGTON.—Within the principal camp on the Wrekin a tumulus stands near the south-western extremity.

WHITCHURCH.—A tumulus is to the south of Moretonwood.

WORTHEN.—Tumuli are situated on Round Hill.

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OF THE

PARISHES IN WHICH EARTHWORKS ARE SITUATED, WITH THE LETTER OF THE CLASS TO WHICH THEY BELONG


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| Acton Scott | F |
| Alberbury with Cardeston | E, F, F |
| All Stretton | B, X, X, T |
| Alveley | F |
| Baschurch | F, F, X |
| Bedstone | C |
| Bettws-y-Crwyn | D, E, T |
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| Bitterley | B, F |
| Boscobel | T |
| Bridgnorth | F |
| Bromfield | F, T |
| Brompton and Rhiston | D, E |
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| Cardington | B |
| Caynham | B |
| Cherrington | F |
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| Chetwynd Aston | F |
| Chirbury | A, C, D, E, E, E, F, X, T |
| Church Pulverbatch | C, E, E |
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| Hopesay | B, B |
| Hopton Castle | B, D, E |
| Ightfield | F, F |
| Kinnerley | E |
| Kinnersley | B |
| Knockin | E |
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| Little Ness | E |
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| Munslow | F |
| Myndtown | T |
| Neen Savage | C |
| Newport | F |
| Norbury | D |
| Oldbury | E |
| Oswestry | B, B, D, D, X |
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# INDUSTRIES

## INTRODUCTION

FOR the leading features of its industrial life, both in the past and in the present, Shropshire is mainly indebted to geographical and geological causes, proximity to Wales having largely influenced the ancient cloth trade of the county, whilst the richness of its mineral resources has resulted in a coal and iron industry which is second only to the similar activities of the neighbouring county of Staffordshire. Dependent to an almost exclusive extent, owing to its inland position, upon the great waterway of the River Severn as a means of conveyance for its economic products, we find the problem of this particular mode of traffic engaging attention at an early date. This industry will be dealt with in a separate section of this article, as befits its importance. In this place it will be sufficient to recall the excellent engineering work which was done in the county between 1795 and 1805 by the well-known engineers, Brindley and Telford,[1] the name of the latter being more especially associated with the construction of the Ellesmere Canal, which united the Severn with the Dee and the Mersey, thus opening up communication between the great seaports of Bristol and Liverpool. Other undertakings of Telford in Shropshire were the building of the watch-tower and the restoring of the Norman castle of Shrewsbury, which he made habitable for his patron, Sir William Pulteney. He also erected an iron bridge of one arch, 130 ft. span, on the Schaffhausen principle, across the Severn at Buildwas in 1796, and would have proceeded to make that river navigable at all seasons of the year from the Meadow Wharf at Coalbrookdale to Gloucester but for the prejudices of the watermen, who offered a strong opposition to his plans. Of the Darbys of Coalbrookdale, the Reynoldses of Ketley, and of Mr. Hazeldine of Shrewsbury, as well as of other county engineers, due notice will be taken later on in connexion with their works.

The dominant intersection of the county by the Severn and lesser streams has given rise to numerous bridges, many of which have an interesting history. Bridgnorth had a bridge, probably of stone, in 1313.[2] In 1331 or 1335 Edward III granted the privilege of pontage[3] to the inhabitants for the repairs of the said bridge. William Boblar gave by will in 1438 12*d.* towards the work of the bridge of Severn. In 1478 William of Worcester writes of Bridgnorth Bridge,[4] whilst Gelian Walton, widow, bequeathed 5*s.* by her will, dated 11 November, 1501, for the repairs of the same.[5]

A French traveller, Jorwin de Rocheford, describes this bridge in 1672 as 'a great stone bridge,' two arches of which had been rebuilt in 1670 by Edward Paget.[6]

Throughout its history the edifice suffered much from floods, and on 12 February, 1685, it was ordered by the corporation that, in future, if any misfortune happened to the bridge, it should not be repaired with *spice* stone,[7] but with as good hard or freestone as it was possible to get.[8]

Leland's list of bridges in the county is a lengthy one, 'the greatest, fairest, and highest upon the stream' in his time being 'the Welsh Bridge at Shrewsbury,' having six great arches of stone, and owing its name to its being 'the way out of the town into Wales.'[9] He also notes 'the bridge over Teme at Ludlow';[10] 'a long

[1] Telford was introduced into Shropshire by Mr. Pulteney, then M.P. for Shrewsbury, about 1787, and almost immediately appointed surveyor of public works for Salop. During his term of office he built forty-two bridges for the county, five of which were constructed of iron. *Shrops. County Records*, No. viii (1902), p. 1.

[2] Add. MSS. 30345, fol. 11.

[3] Permission to exact tolls for a certain period, or during the pleasure of the crown.

[4] William of Worcester, *Itin.* 263.

[5] Add. MSS. 30345, fol. 11.

[6] Ibid.

[7] The common red stone of the neighbourhood. Ibid.

[8] Ibid. In 1520 orders were issued by the corporation of Shrewsbury that no floats were to be permitted to shoot the bridges. *Shrops. Arch. Soc. Trans.* xi, 158.

[9] Leland, *Itin.* iv, 95.

[10] Ibid. 91.

narrow bridge of timber over Meole' ;[11] another called 'Dagge Bridge' at the same place, built of stone with three arches; and a 'new bridge made on Teme by a merchant of London, called Rowland Hill.'[12]

In 1550 Sir Rowland Hill built four bridges in the county, of which he was a native; two were of stone, having eighteen arches each—one over the Severn called Atcham Bridge, and one over the Teme. The other two were of timber, and built at Stocke.[13]

In 1776 the erection of a bridge across the Severn, in place of the ancient ferry at the spot bearing the name of Iron Bridge, was urgently needed, in view of the Coalbrookdale Colliery extensions elsewhere alluded to; Abraham Darby, as owner of the Madeley side, and the Rev. Thomas Harries, as owning the Benthall side, being desirous to promote it. An Act of Parliament was obtained, and the bridge put in hand.[14] There was no long hesitation in deciding that the bridge should be made of iron. A design prepared under Abraham Darby's supervision was selected, and the bridge was cast and erected by the Coalbrookdale Co. in 1779. To suit the position between high ground on both sides it is nearly semicircular, with a width of 100·6 ft., and its roadway is 34 ft. in breadth. As the first bridge built of cast iron it is a remarkable work, and after an existence of 120 years it is still in excellent condition. Iron bridges at Buildwas, Bridgwater, Bristol, Tewkesbury, and elsewhere were afterwards erected.

The history of the railway system of Shropshire begins in 1845, when thirty plans for railways were deposited with the clerk of the peace for Salop.[15] The first mention of railways at Albrighton occurs in 1848.[16] The railways at present in the county are the Great Western, the London and North Western, the North Staffordshire, and a local (Bishop's Castle) line.[17]

In its economic aspect the geology of the county, considered elsewhere in this volume, presents many interesting features. According to the latest returns there are in Salop eighty-nine quarries[18] and sixty-three coal mines under the Coal Mines Regulation Act.[19]

The Shropshire coalfield, according to Mr. Galloway, has been characterized, at all periods in its history, by a remarkable degree of individuality.[20] The letting of coal on lease, for instance, as the same authority points out, began here at an early date. One of the earliest on record occurs at Madeley in 1322, when Walter de Caldebrook, for a fine of 6*s.* paid to Wenlock Priory, was allowed to employ a man for one year, digging sea coals in the brook holes (Le Brocholes).[21]

Fuller writes of the 'river or fresh-water coal, digged out in this county, at such a distance from Severn that they are easily ported by boat into other shires.'[22] 'O if this coal,' he adds, 'could be so charcked as to make iron melt out of the stone, as it maketh it in smiths' forges to be wrought in the bars.'

The method of coal mining in Shropshire is that known as the 'long wall,' also termed 'wide work,' 'the broad way,' 'the long way,' 'long work,' and in some districts where it has been introduced from Shropshire as 'the Shropshire system.'[23] The characteristic of this method is the absence of pillars in the working.

From the evidence of pigs of lead found on Shelve Hill, bearing the imperial mark of the Emperor Hadrian, the workings here would seem to have been carried on with great activity in the second century. The miners of the last century still spoke of the upper part of the Snailbeach mine as the Roman level. This mine, situated at the extremity of the Stiperstones, to the north of Shelve Hill, is one of the most productive in the kingdom.[24] In 1795 it was being worked to the depth of 180 yds. The other mines in the same locality at that date were the Bog mine, then choked with water, and the Hope mine.[25] The ore,

[11] Leland, *Itin.* iv, 94.
[12] Ibid. 97.
[13] *Shrops. Arch. Soc. Trans.* iii, 259.
[14] 16 Geo. III, cap. 5.
[15] *Shrops. Arch. Soc. Trans.* iv, 110.
[16] Ibid. ii, 142.
[17] Kelly, *Dir.* (1905), 2.
[18] *Quarries*, 1906, p. 399. [19] *Mines*, 1906, p. 323.
[20] The Shropshire coalfield was worked by the Romans at Uriconium (Wroxeter) and at Oakengates (Usocona). Wright, *Uriconium*, 115 (ed. 1872); Galloway, *Annals of Coal Mining*, 5.
[21] Eyton, *Shrops.* iii, 321; Galloway, *Annals of Coal Mining*, 61. According to Dugdale, one of the earliest references to the Shropshire coalfield is that in a right of way granted about 1250 by Philip, lord of Benthale, to the abbey of Buildwas, for landing stones, coals, and timber. *Mon. Angl.* v, 360.
[22] Fuller, *Worthies*, iii, 1.
[23] 'Under this system, in its ordinary or typical form, the seam or vein of coal is entirely excavated as the workings advance, the space previously occupied by the coal, now called the *gob*, or *goaf*, a term derived (Richardson, *Accidents in Mines*, 31; Professor Phillips, *Ventilation of Mines*, 5 *n.*) from a Cymric word *ogof*, a cave or hollow, being partially or wholly packed or plugged up with stones and refuse, upon which the superincumbent strata settle down. Through the excavated part of the mine the necessary roads, called *gob-roads*, are maintained by strong packs of stone, some yards in thickness, built on both sides; and when these become so crushed down by the subsidence as to reduce the roads below the height required, additional height is obtained by cuttings made in the roof or floor; so that frequently in the course of time almost the full height of the road has been cut out of the solid strata.' Galloway, *Annals of Coal Mining*, 203–4.
[24] *Shrops. Arch. Soc. Trans.* xi, 280. Thirty metalliferous veins were at one time profitably worked in the Shelve district. Murchison, *Silurian System*, 282.
[25] Aikin, *Tour*, 203.

according to Aikin, was—1. Sulphuret of lead, both galena and steel ore, the latter containing silver; 2. Carbonate of lead, crystallized; 3. Red lead ore (first discovered here by Raspe, a German mineralogist); 4. Blende, or black-jack. After being reduced at Minsterley, and at other places near the mines, the lead ore was sent by land carriage to Shrewsbury, and there shipped in Severn barges to Bristol.[26]

Very little, however, of the history of these mines can now be recovered. In 1179 Hugh Pantulf, the sheriff of Shropshire, accounted for £55 received from Nicholas Poucier for the king's lead from the mine of Shelve (Scelfe), and the same year Madoc son of Eniun obtained a five years' lease of this mine at 40 marks.[27] The Pipe Roll of 1181 mentions 68*s.* paid for carriage of lead from Shrewsbury to Gloucester, and £38 for 110 loads of lead obtained for the works at Amesbury, while next year 30 loads (*carcate*) of lead, valued at £10 10*s.*, were sent to Gloucester for the church of Amesbury.[28] In 1184 the sheriff paid 46*s.* 3*d.* for carriage of 30 loads of lead from the mines to Gloucester, and 18*s.* 9*d.* for the carriage of the same amount from Shrewsbury to Gloucester,[29] but slight evidence exists of any later lead-mining in this district.

Murchison records the existence of disused lead mines in the Much Wenlock district.[29a]

In 1879 the Roman Gravel Lead Mining Company began work at Shelve Hill, where many shafts and galleries were brought to light dating from Roman times. The Roman method was to begin with the surface veins, then to follow the veins into the hill, the size of the cutting varying with the extent of the vein.[30]

Lead-mining is carried on at the present day in the Atcham district, and also in that of Clun, the company chiefly engaged being that called the Snailbeach Lead Mining Company. Lead was raised in 1903 to the amount of 829 tons, and to the value of £6,687.[31]

Copper was mined in Roman times on Llanymynech Hill from shallow pits on the surface of the hill, traces of these ancient workings being found in fragments of copper ore and vestiges of smelting hearths, &c. These mines were also worked by means of winding passages 3 yds. wide.[32] Similar passages, in this case 80 yds. in breadth, are to be found in the grotto at Hawkstone Park, as also at Grinshill,[33] where the workings, however, have been long abandoned.[34]

Salt was made on a small scale at Broseley in the eighteenth century from water taken from the coal-pits.[35]

It is interesting to note, says Mr. Walters, how both in mediaeval and in recent times facilities of water communication enabled the great Gloucestershire and Worcestershire foundries, especially the former, to supply bells to Shropshire *ad lib.* up the Severn.

Johannes le Belleyettere of Shrewsbury, whose name appears in the roll of the Gild Merchants in 1344–5, cast the smaller bell of Longnor, which is worthy of notice as the only mediaeval example with the founder's name in the county.[36]

The name of a famous Shropshire bell-founder is preserved in the parish register of Much Wenlock. This founder was Sir William Corvehill, priest, who was buried 26 May, 1546. He was, we learn, 'a good bell-founder, and maker of the frame for bells.' On the south-east of the abbey, a field called the Bell Hole probably marks the spot where he cast his bells, some of which are said to have gone to the parish church of Wolverhampton.[37]

The churchwardens' accounts of the parish of Worfield contain a brief allusion to this founder in 1532, when 'Roger Catestre takyth upon him that the subprior of Wenloke w'os name ys Dominus Wyllyam Wenlok shall mend the organ upon his costes and charges.'[38] The sub-prior was Corvehill, who was a maker of organs as well as a bell-founder, both crafts being attributed to him in the register of Thomas Botelar, vicar.[39]

The Cliburys of Wellington were a bell-founding family in the seventeenth century, casting no less than 100 bells in Shropshire and adjoining counties. Mr. Walters is of opinion that there were two Cliburys named Thomas, the elder dying rather young in 1637, leaving two children, Francis and John, born 1635–7; the younger, possibly a cousin, was born about 1620, and died in 1673. The eldest son of this later Thomas was Henry, born 1645, who succeeded his father in 1673, and gave up bell-founding about 1685, none of his bells dating later than that year. William Clibury, whose name occurs in full on a trade-mark at Clunbury,[40] does not appear in the registers of Wellington, where most of his kinsmen's names are to be found; but these only begin in 1626, and he may have died elsewhere. John Clibury, whose name as a bell-founder occurs in the parish accounts of Cheswardine and Condover about

[26] Aikin, *Tour*, 205.
[27] Forest. Proc. Exch. T.R. No. 143; Pipe R. 26 Hen. II.
[28] Pipe R. 28 & 29 Hen. II.
[29] Ibid. 31 Hen. II.
[29a] Murchison, *Silurian System*, 214.
[30] *Shrops. Arch. Soc. Trans.* ii, 350.
[31] Kelly, *Dir.* (1905), 3.
[32] *Shrops. Arch. Soc. Trans.* ii, 352.
[33] Ibid. 353. [34] Ibid. 362.
[35] Townson, *Tracts*, 176.
[36] *Shrops. Arch. Soc. Trans.* (Ser. 3), ii, 77. I am indebted to the courtesy of Mr. H. B. Walters for this reference.
[37] *Shrops. N. and Q.* (21 May), 1885, p. 135.
[38] *Shrops. Arch. Soc. Trans.* (1906), i, 50.
[39] Lukis, *Church Bells*, 17.
[40] See *Shrops. Arch. Soc. Trans.* (1905), pl. xi.

1595–1600, was probably William's predecessor, as he died about 1605.

Another founder, Thomas Roberts, 'of Salop,' of the Abbey Foregate, Shrewsbury, was admitted burgess in 1672. He died about 1684. His successor, whose name has not been traced, was at work 1685–1700.

I.B. of Wellington was casting about 1690–1700.

The county had a considerable reputation for church and turret clocks. The industry may be said to have begun at Rodington, where John Keeling made several large clocks, one for the White Hall in 1692. His work is said to have been 'interesting and ingenious.' His successor was a clockmaker named Brisbourne. We next find Richard Bullock engaged in the art at Ellesmere, the peculiarity of his clocks being that they were all numbered. Their number is said to have exceeded 870. Bullock died in 1790. John Baddeley of Tong, who afterwards removed to Albrighton, was an ingenious mechanic, who 'brought the parabolic curve of the reflecting telescope nearest perfection.'[41] His son-in-law, Robert Webster, had a large manufactory at Mardol in 1783. He made clocks for Millington's Hospital, the county jail, Chirbury, Clunbury, Ellesmere, and Worthen churches. Joyce, of Whitchurch, was a later maker of repute in the county.[42]

A clock was set up by the bailiffs of Shrewsbury in 1592 having three dials, one inside the Guildhall, and two outside. This Elizabethan timepiece, we are told, not only noted the hours, but the increase and decrease of the moon, 'very artificial and commodious to the beholders.'[43]

A very ancient Shropshire industry was that of the smiths or hammermen of Ludlow, whose records for over 300 years show their charter to date from 1511. In the fraternity were included the following:—Smiths, ironmongers, saddlers, brasiers, pewterers, spurriers, bucklemakers, brigand-irons-makers, armourers, masons, card-workers, and coopers.[44] Apprentices were bound for seven years, the widow of a free master retaining the apprentice unless she married again. On attaining his freedom, the apprentice paid from 6*s*. 8*d*. to 10*s*. The fraternity was governed by stewards, six men, four key-keepers, and a box-keeper.[45] The place of meeting was under the south gallery of the church.[46] In 1600 there were about sixty-five free masters.[47]

There are in Shropshire 160 millers and a still greater number of mills, worked by wind, water, and steam, many of which, however, are standing idle, only two windmills being now at work, one at Ellesmere, and the other at Loppington, both owned by Mr. Thomas Kynaston. Water-mills are numerous, and are generally found in the more picturesque localities, as on tributaries of the Severn, or where there is a stream powerful enough to turn a wheel. Some are undershot, where the stream is powerful, others are overshot, where it is less so, the size of the wheel varying according to the size of the stream, some being of enormous proportions, where the fall is great, as in the case of the mill on the stream which divides the parishes of Broseley and Benthall. A still larger mill, in Sutton Maddock parish, known as Sweyney Mill, was last used for grinding linseed by the Hortons, and has since been taken down. Several of the old mills mentioned in Domesday, which were a source of great revenue to their owners, the heads of religious houses, are still in existence, though many are in ruins, as in the case of the Manor Mill, Madeley, which in 1379 paid 10*s*. rent per annum, a large sum in those days.

Monastic mill-owners in mediaeval times were strenuous upholders of their rights, the insistence upon which was the cause of endless contention. The monks of Wenlock, who were owners of the manor of Sutton, had a prolonged quarrel, lasting from 1234 to 1240, with the monks of Shrewsbury, with regard to a mill under Sutton, the latter complaining that the water from the mill damaged their land in the field of Coleham.[48]

An early charter of Shrewsbury Abbey contains reference to the mills belonging to the monks, to whom the earl of Shrewsbury granted the multure of the whole city, the burgesses being forbidden to grind their corn elsewhere. The bad feeling caused by this edict was the source of a lengthy dispute between the town and the abbey.[49] By licence from Edward III, 12 May, 1328, the former were at length permitted to erect mills within their town for the purpose of grinding corn and malt. The number built was twelve, capable of grinding 20 quarters day and night.[50]

In 1383 Richard Talbot owned a water-mill at Wolferton called 'Berwardis-mylne,' worth 16*s*. a year.[51]

Hugh Pandulf at an early date obliged by charter one of his freehold tenants and men to grind at his mill at Wem, to assist at the carriage of the millstones, and in mending the mill-pond.[52]

[41] Baddeley's clocks were 'grandfathers,' and made at the house known as the 'Clock Mills,' the power for which was derived from the adjoining watercourse; *Shrops. Arch. Soc. Trans.* ii, 98.

[42] *Salopian Shreds and Patches*, 25 May, 1881.

[43] *Shrops. Arch. Soc. Trans.* iii, 324. [44] Ibid. ii, 293.

[45] Ibid. 306–7. [46] Ibid. 304. [47] Ibid.

[48] *Shrops. Arch. Soc. Trans.* x, 343.

[49] The mills were three in number, the Burnt Mill, Trill (now Prince's) Mill, and the Abbey Mill; *Shrops. Arch. Soc. Trans.* ii, 223.

[50] Owen and Blakeway, *Hist. Shrewsbury*, i, 161.

[51] Inq. p.m. 6 Ric. II, 1 April, 1383.

[52] Garbet, *Hist. of Wem*, 241.

In the reign of Henry VI John Hale, Thomas Rolfe, William and Hugh Burgh, Roger Corbet, John Wynnesbury, and William de Lee were appointed commissioners to view the banks of the Severn, and if any mills or wears obstructed the passage of the river they were to pull them down.[53]

There were mills at Ludlow from the earliest times in the possession of the bailiffs, burgesses, and commonalty of the town, who duly received rents for the same.[54]

There were four ancient mills on the Corve, which were conveyed by one Jenevel and Mawde his wife to the priory of Aconbury. In the reign of Elizabeth these mills were leased to Ellis Winn and Francis Jenks.[55]

A mill called 'Green Mill,' in Much Wenlock, also another known as 'Mason's,' designated together as 'two ancient water corn mills,' formerly part of the monastery of St. Milburgh, had passed by the same date into the queen's possession.[56]

By an agreement 9 Henry VIII, between William Leyghton and Margery his wife, seised of the manor of Donington, and Sir John Talbot of Albrighton, the latter was permitted to build mills in Albrighton, 'so that they were set over Mill Brook or Clock Brook.'[57]

There were paper-mills on the Tern in 1818,[58] and at Selattyn in 1822.[59] The only one now working in the county is that at Tibberton, near Newport, of which Martin, Billing & Co. are proprietors.

There is a record of one Roger le Parmenter making parchment in the reign of Edward II opposite Shrewsbury Castle, in what was long a skinner's yard.[60]

The abundance and density of the woods of Salop, which provided early labour for the wood-cutter,[61] gave equal encouragement to the turner's craft. Gilbert and William the Turners, whose names appear on the Lay Subsidy Roll for the hundred of Brimstree in 1327,

doubtless gained a livelihood (says Mr. Fletcher) from the abundant woods of the neighbourhood. In the days when china was unknown, and metal scarce, turners' wares were in great request.[62]

Such were the wares recorded at Cleobury Mortimer in the same century as having been made and sent to Ludlow at a cost in one case of 30*s.*, or 6*d.* per hundred, the items including 1,200 dishes, bowls, and saucers in sets of three (*disci parapsides et salsaria tripplicata*). A similar order was executed for 1,000 dishes and bowls, whilst for the banquet (*convivio*) of Gatelithe 600 dishes, bowls, and saucers in sets of three were furnished at 15*s.*, 200 bowls and dishes separate (*simplic*) were made for the same occasion at 2*s.*, 100 plain cups being provided at 3*s.*, six cups with covers costing 12*d.*[63]

Bendware, turnery, and wood goods are manufactured on a large scale by R. Groom & Co., Ltd., the works occupying a considerable space. Outside the town of Wellington, quantities of timber may be seen stored for future use, brought there from all parts of the county where woods are plentiful and their owners disposed to make falls of timber, the quantity of wood of various kinds annually used at these works being enormous. A large number of skilled workmen find employment, and machines of various kinds are in use for cutting, planing, turning, and shaping the different articles. These are generally of a useful character, including bowls, sieves, churns and their accessories, butchers' boards, washing utensils, such as washing-boards, clothes pegs, clothes horses, dollies, and many other articles for domestic use.

At Coalport Wood Works, carried on by the late Thomas Griffiths and now by his son, W. H. Griffiths, the proprietors were engaged in the first half of the nineteenth century chiefly in building canal boats, and purchasing timber for the construction of barges for Severn traffic, but the introduction of railways into the district and the closing of the canal from Madeley to Oakengates stopped the demand for the former, and the absorption of the river traffic by the Severn Valley Railway destroyed the trade in the latter, so that the industry has changed its character during the last fifty years, and has assumed that of a timber merchant. One of the specialities produced is that of cleft oak field gates, which are made of the best material and are celebrated for their strength and durability.

The history of the cloth trade in Shropshire differs at least in one particular from the annals of that industry in other parts of the kingdom; the drapers of Shrewsbury presenting the singular spectacle of a powerful fraternity whose revenue was derived not from their own local manufactures, but from the distant markets of Oswestry, Welshpool, and Montgomery,[64] and the still more

[53] Add. MSS. No. 21019, fol. 23.
[54] Exch. Dep. by Com. Trin. 8 Chas. I, No. 13.
[55] *Shrops. Arch. Soc. Trans.* ii, 49.
[56] Exch. Dep. by Com. East. 43 Eliz. No. 4.
[57] Ibid. East. 26 Eliz. No. 3; ibid. Mich. 37 Eliz. No. 58.
[58] Garbet, *Hist. of Wem*, 4–6.
[59] *Shrops. Arch. Soc. Trans.* ix, 250.
[60] Owen and Blakeway, *Hist. Shrewsbury*, ii, 154.
[61] The sheriff of Salop was ordered to provide 200 woodcutters (*coupiatores*) at 3*d.* a day, in the reign of Edw. I, to cut passages for the king's army into Wales; Rot. Wall. 10 Edw. I, m. 5.
[62] *Shrops. Arch. Soc. Trans.* v (Ser. 3), 239.
[63] Mins. Accts. bdle. 965, No. 10.
[64] Add. MSS. 21023, fol. 208. In addition to their authority over the market of Oswestry, the drapers also controlled the fortnightly markets at Welshpool and Montgomery.

distant looms of Wales.[65] The situation thus created was destined to be marked in process of time by growing rivalries and inevitable difficulties constantly arising between Shrewsbury and Oswestry, reaching their height in the early years of the seventeenth century, and only finding their solution with the advent of increased facilities of communication with the cloth-making centres of Wales, and the consequent passing of the Shropshire mediaeval middleman. The 'drapery' trade of Shrewsbury, nevertheless, proudly mindful of the 'very great and unusual privileges' [66] conferred upon them by their charter,[67] have always claimed that, although the actual process of manufacture was a Welsh industry, 'the buying of cloths in Oswestry and dressing them' in Shrewsbury 'is an ancient trade,'[68] being thus designated no less than twenty times in Elizabethan statutes.[69]

The glove trade, although of less importance in Shropshire than in some other counties, as for example Worcestershire and Somersetshire, was among the most noteworthy industries of former times, the glovers, with whom were associated the poyntmakers, pursers, leathersellers, fellmongers, and parchment-makers,[70] being among the most numerous and important of the trade gilds of Shrewsbury even prior to their charter of incorporation in 1479.[71] On the Merchants' Gild Roll of Shrewsbury in 1281, glover appears both as a surname and a trade.[72] William le Gaunter was bailiff of Ludlow in 1297, Philip le Glover filling the same office in 1315.[73] When associated with the mercers, tailors, and hatters, the glovers were sometimes known as the Company of Stitchmen.[74] A glover appears on Shrewsbury Tax Roll for 1352.[75] Apprentices served for seven years, paying a fee of 22*s.* 8*d.* on taking up their freedom, or 13*s.* 4*d.* in the case of the son of a freeman.[76] The officers of the company were two wardens, four sitters (afterwards called assistants), two stewards, a council of nynemen, and the combrethren.[77] The industry here, as elsewhere, was carefully regulated, various interesting rules being embodied in the records of the company. Combrethren were only allowed to keep one shop each. No wares made of white tanned leather were to be sold to any foreigner dwelling in Abbey Foregate not free of the company. The penalty for infringing this rule was 20*s.* No skins were to be bought on Sundays; offenders were fined 6*s.* 8*d.*[78] A frequent item on the company's books is the rent of their 'Arbour.'[79]

In the reign of Elizabeth, George Taperle, glover, of the town of Salop, then occupying the trade and mystery of silk-button making within the town, was made a freeman of the town in 1563 for 36*s.* 8*d.*,

> that he might lawfully occupy the making and selling of silk buttons, silk laces, gold wire and thread, but not to deal in any other wares or merchandise.[80]

In 1614 a new composition was drawn up by the Glovers' Company. By it a foreigner's fine was fixed at 20*s.*, an apprentice's at 26*s.* 8*d.*, sons of freemen paying 13*s.* 4*d.* The sale and purchase of skins for the use of the craft was also regulated. No skins were to be bought within any house, but only in a street called the Fleshboards, between the hours of 9 a.m. and 4 p.m. The composition in question bears date 8 August, 1614.[81] In this year the following glovers were occupying premises belonging to the Abbey Parish Church Estate at Shrewsbury:—Robert Fraunce, Richard Lee, Robert Rawson, and John Hole.[82]

In 1712 interesting particulars were forthcoming, in a suit between Thomas Vaughan and John Davis, relative to the 'factorage of gloves' in the county. Glovers, it would appear, employed factors in London to sell their gloves, the factors receiving 'for their pains' 6*d.* per pound. The gloves were forwarded to London in bundles, 28 dozen in one bundle.[83]

Ludlow, where the annual output of gloves was formerly 70,000 dozen, giving employment to 1,000 persons, had but six men engaged in the industry in 1832, the skins utilized at this date in the manufacture being all Scotch and English.[84] In 1840 the trade was spoken of as 'extinct.'[85] The decline in wages of cutters had gradually progressed from 30*s.* to 11*s.* a week.[86]

[65] 'Of manufactures,' writes Fuller, 'this county can boast of no one, her original, but may be glad of one to her derivative: viz. the Welsh friezes brought to Oswestry, the staple of that commodity.' Fuller, *Worthies*, iii, 1.

[66] 'Peramplae libertates concessae pannariis villae Salop.'

[67] 1 Edw. IV, 1461–2. The Weavers' Company received their charter 27 Hen. VII, 1448–9.

[68] Add. MSS. 21023, fol. 215.

[69] 8 Eliz. cap. 7; 14 Eliz. cap. 12; 16 Eliz. cap. 14.

[70] *Shrops. Arch. Soc. Trans.* vii, 434.

[71] Ibid. x, 35.

[72] Ibid. ii, 57.

[73] Ibid. (Ser. 3), vii, 157.

[74] Ibid. ii, 108.

[75] Ibid. iii, 271.

[76] Ibid. vii, 431.

[77] Ibid. x, 36.

[78] *Shrops. Arch. Soc. Trans.* x, 36.

[79] The different gilds of Shrewsbury had an 'Arbour' at Kingsland. These arbours were tents of wooden framework erected on privileged inclosures of a quarter to an eighth of an acre. The interior was furnished with tables and benches where the business of the various companies was transacted; *Shrops. Arch. Soc. Trans.* vi, 190–1.

[80] Ibid. viii, 317.

[81] Ibid. vii, 435.

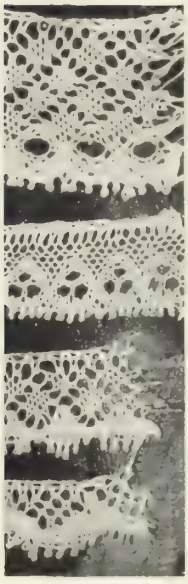
[82] Ibid. i, 46.

[83] Exch. Dep. by Com. East. 11 Anne, No. 20.

[84] Hull, *Hist. of the Glove Trade*, 66.

[85] *Rep. Hand-loom Weavers* (1840), 542.

[86] Ibid. In 1670, among the items entered in the expense-book of the vicar of Cleobury Mortimer is a pair of gloves from Ludlow, 4*d.*; *Shrops. Arch. Soc. Trans.* v (Ser. 3), 212.



Specimens of Bridgnorth Lace

Bobbins used for Lace Work

Hatting was a trade carried on quite vigorously in Shrewsbury until sixty years ago, but the industry has now become extinct. The form of indenture on apprenticeship ran 'that the master was to teach the boy the art and mystery of felt-making.' In 1531 the cap and hat makers of Shrewsbury petitioned that penalties might be inflicted, in accordance with the provisions of the Act 20 Hen. VIII, cap. 9, upon all persons selling French caps and hats at a higher price than was allowed by the said Act.[87]

Stevy Bente, 'cappemaker,' was admitted to the freedom of Shrewsbury in 1424.[88] Davy Capper paid a fine of 20*s.* at Shrewsbury 10 Edward IV, Richard Capper paying a similar fine 12 Edward IV, whilst in the following year we find Richard Phelyps paying a similar amount.[89] Geoffrey Powys paid a fine of 20*s.* in 1477, for 'making, buying, and selling of caps.' If he used any other trade, 20*s.* more.[90]

The capping trade was also carried on in Bridgnorth in Elizabethan times, that town being specially mentioned in the Act of that queen's reign specially dealing with the regulation of the industry.[91] Strype recounts how the violation of this Act tended

> to the decay, ruin, and desolation of divers antient cities and boroughs, which had been the nourishers and bringers up in that faculty of great numbers of people, as London, also Exeter, Bristol, Monmouth, Hereford, Ross, and Bridgnorth.[92]

The art of pillow lace-making was introduced into Bridgnorth by a French refugee, M. de la Motte, prior to 1781, at which date he was executed as a spy.[93] The industry gave employment to many women, who were chiefly residents in the Cartway. Apprentices were taken, Mrs. Jewkes being a well-known lace-maker who employed several in 1824. The lace, which is said to have been beautiful in design, and noted for its wear and durability, was selling at that date for half a crown a yard. The chief purchasers were to be found among the Welsh who frequented Bridgnorth fairs. The trade, however, gradually declined through the introduction of machine-made lace, the last person engaged in the business being a Mrs. Lloyd, who was a tenant of Mr. Hubert Smith, in Moat Street. This lace-maker supplied a limited number of customers in London, at prices varying from 1*s.* 6*d.* to 2*s.* per yard. With her death, about 1875, the industry came to an end.

In 1774 a premium was bestowed by the Society for the Encouragement of the Arts on 'black silk lace taught to 133 girls at Bridgnorth by Mr. John de la Motte.'[94]

A ribbon factory was established at Shrewsbury after the massacre of St. Bartholomew, by a French refugee named François Dubois. His name, anglicized to 'Frauncys Wood,' appears in a list of Shrewsbury weavers.[95]

In the churchwardens' accounts of Ludlow in 1555 there is an entry of 'five yards of cheker lace' bought for the weavers' vestments, probably for some church festival or procession, at a cost of 3*d.*, but there is nothing to suggest that this was of local manufacture.

The Coleham brush factory was founded by Mr. William Hudson, of Mardol, Shrewsbury, in 1818. Subsequently it was acquired by Mr. J. Hudson Davies, the present proprietor, by whom it was removed to the premises now occupied, known as the Coleham Factory. The main block of the buildings contains five stories, while the auxiliary structures and yard are large and commodious. All the various processes of brush-making are done on the premises, the works being completely equipped in this respect. The articles manufactured comprise brooms and brushes in a great variety of substances, including hair, coco-nut fibre, and cane, the Madagascar bass broom being a variety specially introduced by Mr. Davies.

Clog and patten-making, which was formerly a flourishing industry, especially in Shrewsbury and at Ironbridge, has died out with the loss of the ready market once open to it in country places.

Linen thread was made in Shrewsbury at the commencement of the last century by the firms of Marshall and Benyon, both Leeds manufacturers.[96] Both these factories have been closed for more than half a century.

A new industry sprung up within the latter half of the nineteenth century is the manufacture of mineral and aerated waters, chiefly in the following towns: Bishop's Castle, Bridgnorth, Ironbridge, Church Stretton, Ludlow, Market Drayton, Oakengates, Oswestry, Wellington, Whitchurch, and Shrewsbury. Some of the factories are on a large scale, more particularly those where there is pure spring water available, as in the Spons Valley, Church Stretton, and other places.

Hemp and flax were largely grown at the close of the eighteenth century, in order that growers might claim the bounties offered at that time, to encourage their cultivation. In 1784 we find thirty-three persons in the county

[87] MSS. House of Lords, 26 Jan. 1531.
[88] *Shrops. Arch. Soc. Trans.* viii, 303.
[89] Ibid. [90] Ibid. 305. [91] 13 Eliz. cap. 9.
[92] Strype, *Ann.* ii, 109–10. [93] *Gent. Mag.* 1781.
[94] Dossie, *Memoirs of Agric.* iii, 458.

[95] *Salopian Shreds and Patches*, 28 May, 1878, p. 10; *Bye-Gones*, 26 March, 1902, p. 319; Mary Howitt in her 'Reminiscences,' published in *Good Words* in July, 1885, mentions that her mother was a granddaughter of William Wood, 'fourth in descent from François Dubois, who fled to Shrewsbury at St. Bartholomew, and founded a ribbon factory there'; *Bye-Gones*, July, 1885, p. 262.

[96] The latter firm celebrated the jubilee of George III by a procession of their employés, to the number of 600, comprising flax-dressers, spinners, linen weavers, and canvas weavers; *Salopian Journ.* 1 Nov. 1809.

claiming bounties, the majority belonging to Wellington and Whitchurch; Lilleshall, Wrockwardine, and Kinnersley being also represented.[97]

'Tow-dressing' was a craft in general use in the county.[98]

In the parish of Felton, where hemp and flax were largely grown, spinning-wheels were to be found in every cottage, on which the raw material was spun, and afterwards handed over to the local weavers to be woven into towels and sheets. Places in the parish still known as 'flaxpool' and 'hempyard' recall the vanished industry, the 'flaxpool' having been the site on which the flax was steeped in water before being spun, this steeping being forbidden where animals had to be watered.[99]

From the numerous entries of needlemakers on the burgess roll of Much Wenlock, it may be gathered that the industry was once carried on to some extent in the district. Bundles of needles have been taken out of the watercourse in the centre of the town.[100]

Shrewsbury had an ancient reputation for brawn, which was 'reckoned to exceed' that of Canterbury.[101] George Taylor was a leading maker of this commodity ('proper to the English,' according to Fynes Moryson[102]) in 1802, when he announced by advertisement in a local paper that he was 'declining' business.[103] In the next number of the same paper Thomas Hands announces the 'beginning' of the season.[104]

W. Howell, a butcher of Oswestry, advertised in a local paper of 17 October, 1804, that he had 'engaged a person from Shrewsbury well acquainted with brawning, and hoped to receive encouragement in the year to come.'[105]

Shrewsbury cakes, again, were a dainty with which epicures in confectionery were well acquainted at least 300 years ago, as the following letter, dated 17 August, 1602, will show :—

> Lest you should think this country ruder than it is (says the writer) I have sent you some of our bread, which I am sure will be dainty, howsoever it be not pleasing. It is a kind of cake which all country people use, and made in no place in England but Shrewsbury. If you vouchsafe to taste of them, you enworthy the county and the sender.[106]

Congreve, in his *Way of the World* (1700), writes 'as short as a Shrewsbury cake.'[107]

Although the fame of Shrewsbury ale[108] is of long standing, the brewing industry has been less actively carried on in this than in the neighbouring county of Staffordshire. Here, nevertheless, the ale-wife and the ale-taster figure alike in town and village. The Bush Inn at Albrighton long recalled, not only with its name, but by the bough of holly nailed over its door, and renewed once a year, the mediaeval mode of summoning the ale-taster to perform his office. 'Bye-brewers' took out a licence for two days only in March and May to enable them to sell at the yearly fairs. The constable, as ale-taster, inspected the brewings overnight.[109] In 1407 Thomas earl of Arundel granted to Oswestry that no Shrewsbury ale should be sold in the town without a licence, under penalty of 6*s.* 8*d.*[110] Bennet Tupton, a 'bere bruer' of Shrewsbury, 1409–24, founded the almshouses in St. Chad's churchyard.[111] At Ruyton, in 1430, three gallons of ale of each brewing were paid to the lord of the manor.[112] In 1519 the brewers of Shrewsbury were ordered by the corporation not to use 'that wicked and pernicious weed, hops,' in their brewings under the penalty of 6*s.* 8*d.*[113] In this year tensers[114] selling ale in Shrewsbury were ordered to pay 6*d.* per quarter.[115] In the following year ale-sellers in the town were ordered to be burgesses or to pay 6*d.* per quarter. All ale-sellers were to be first licensed, and to sell at 2*d.* per gallon, in sealed measures.[116] The price of ale was fixed in this year at 1*d.* per gallon for the best sort, and $\frac{1}{4}d.$ for the meaner sort.[117] In 1521 the best ale was selling at $1\frac{1}{4}d.$ per gallon.[118] Richard Brewer was carrying on his industry in Shrewsbury in 1538.[119] In 1580 there was a

[97] The bounty for hemp was 3*d.* per stone (14 lb.), that for flax 4*d.* per stone; *Shrops. County Rec.* No. 7, p. 1.

[98] In 1747 Richard Clemson was a tow-dresser in Back Lane, Shrewsbury; *Shrops. Arch. Soc. Trans.* iii, 224.

[99] Hemp and flax were dressed with tools called 'tutors' or 'etchells'; *Salopian Shreds and Patches*, 24 May, 1882.

[100] *Shrops. N. and Q.* 21 May, 1885, p. 138.

[101] Shrewsbury was formerly as celebrated for its brawn as Cheshire for its cheese; *Bye-Gones*, May, 1879, p. 210.

[102] Moryson, *Itin.* 150.

[103] *Salopian Journ.* 20 Oct. 1802.

[104] Ibid. 27 Oct. 1802.

[105] *Bye-Gones*, May, 1899, p. 210.

[106] *Loseley MSS.* (ed. Kemp), p. 355.

[107] Vol. xiii, p. 3. In 1651 the bailiffs of Shrewsbury paid 2*s.* for a dozen fine cakes for my Lord Stafford; whilst in 1669 four dozen sugar cakes were ordered for the funeral of Sir John Hardinge; *Bye-Gones*, 3 March, 1886, p. 141.

> She has given him a roll and a bun,
> And a Shrewsbury cake,
> Of Pailin's own make

('A Legend of Shropshire,' *Ingoldsby Legends*). 'Oh, Pailin!' adds the author in a footnote, 'Prince of cakecompounders! the mouth liquefies at thy very name—but there!' This famous confectioner is now represented by Mr. Thomas Plimmer, of 17 Castle Street, Shrewsbury.

[108] Shrewsbury ale figured in profusion at a feast given by Owen Glendower at his castle of Sycharth in 1400; *Salopian Shreds and Patches*, 14 Dec. 1881.

[109] Ibid. 12 Jan. 1887.

[110] Ibid. 8 March, 1882.

[111] *Shrops. Arch. Soc. Trans.* iii, 242–3.

[112] Ibid. ix, 245.

[113] *Shrops. N. and Q.* 10 Sept. 1886, p. 163.

[114] Tensers=non-gildated traders. *Shrops. Arch. Soc. Trans.* iii, 258.

[115] Ibid. xi, 155.

[116] Ibid.

[117] Ibid.

[118] Ibid. 18.

[119] Ibid.

brewhouse set up near Shrewsbury Abbey; Rychard Joanes of Nottingham began to brew for the town on 19 March, 1579, and inhabited the brewhouse.[120] An entry in the parish registers of Holy Cross and St. Giles records the christening, on 15 May, 1581, of Margaret Chrystall, 'the beer brewer's daughter of the Abbey.'[121] Several fires were due to malt kilns in the town in Elizabethan times. In one case, in 1598, when Humfrey Sherar, shearman, had his house burnt in Barker's Street, the fire was quenched by water from the tan-pits.[122] In 1600 certain persons were appointed by the bailiffs to brew beer and ale for the town of Shrewsbury, and to put down all pan brewers, especially common alehouses that used brewing, but innholders might brew for the utterance and provision of themselves and the entertainment of their guests.[123] In 1621 all maltsters, being strangers and foreigners, and not keeping scot and lot in the town, and bringing malt to sell, were ordered to sell the same in open market, and not in shops or houses.[124]

In 1657 common brewers in Shrewsbury were debarred from being members of the House.[125] In 1722, among the orders of the corporation of Shrewsbury, we find one relating to the methods taken to prevent the masters of the borough hindering the payment of the toll on barley.[126]

As a result of brewing being carried on at night, Oswestry was burnt down on 26 April, 1566.[127] In 1748 a 'Building and Malt mill lying in Oswestry near the castle hill, and then or late in the possession of John Evans,' was purchased from Richard Thornes of Oswestry, gentleman. This building, known as the 'Bailey Malt Mill,' was used for the site of the first Nonconformist chapel in Oswestry.[128]

Wem was noted for its excellent malt liquors.[129]

Bridgnorth had a special reputation for its so-called 'Cave Ale' or 'Eaves' Beer,'[130] the former term being thus accounted for:—A great number of cellars in the town were hewn out of the sand rock there, and this was the cause why this ale was so celebrated: the even temperature of the rock cellars, there being no draught of air, and always a natural warmth summer and winter. These cellars, one of which was 33 ft. by 17 ft., holding five hogsheads of 320 gallons,[131] were chiefly situated between the upper and lower towns, and were rented by the brewers for the storage of the ale.[132] At the Michaelmas Assizes of 1640 the corporation of Bridgnorth was charged to be careful to allow but a competent number of alehouses in the town.[133] At the Epiphany Sessions of 1652 Thomas Gittins was committed to gaol upon statute Edward VI for selling ale at Bridgnorth without a licence.[134] All alehouses 'keeping tippling on the Sabbath' were presented and suppressed on the same occasion.[135]

While Shropshire has thus borne its share in promoting utilitarian trades and in catering for the needs of the body, it has not entirely neglected the requirements of the mind and the more aesthetic branches of applied science.

Art in its various branches has been largely represented in the county: by the Brothers Gill, of Ludlow; by John Smith, animal painter, of Broseley; by Vandyke Brown, of Bridgnorth, whose drawings of churches and houses in Shropshire are familiar to the people of Shrewsbury. As draughtsmen the Rev. John Parker of Oswestry, and the Rev. John Brook of Shifnal have made interesting contributions to local art; whilst special mention should be made of Mr. John Cox Bayliss, whose entrance into this field was coincident with the demand for good draughtsmen which was quickened by the introduction of lithography into England in 1817 by Ackerman of London, the development being the autographic expression of the artist's idea as expounded and made popular through the medium of the writings of Hulmandel. In addition to the Salopian artist already named, Mr. Philip Ballard associated himself with this artistic movement.

Seeing the possibility of the artist expressing his ideas without the intervention of the engraver, Mr. Bayliss made drawings and models of all the parts required for a lithographic printing machine, for which the blacksmith cast all the wheels and machinery, while the carpenter built the framework of the press, which was set up in his own house. His son, Sir Wyke Bayliss, informed us that he has parts of this press still remaining, as cherished relics, and that they were as quaint, when compared with the modern press, as 'Puffing Billy' with the present-day steam engine. However, it served its purpose, and some of the earliest lithographic pictures produced in this country were printed by Mr. Bayliss in his own house. Being an artist, he made his drawings on the stone direct. As a result he published the beautiful book entitled *Views in Shropshire*, by J. C. Bayliss.

The art of lithography appears to have been introduced into Shrewsbury by a Mr. Bell, of Mardol, about the middle of the last century. In 1860 it was utilized by Mr. Lewis, of Market Street, in connexion with his business as an engraver, for printing from copper-plates, and he

[120] *Shrops. Arch. Soc. Trans.* iii, 283.
[121] Ibid. i, 79.
[122] Ibid. iii, 343.
[123] Ibid. 345.
[124] Ibid. xi, 172.
[125] Ibid. 185.
[126] Ibid. 202.
[127] Ibid. iv, 175.
[128] Ibid. iv, 175.
[129] Garbet, *Hist. of Wem*, 250.
[130] *Shrops. N. and Q.* 22 May, 1885, p. 51.
[131] Add. MSS. 30345, fol. 5.
[132] *Shrops. N. and Q.* 22 May, 1885, p. 53.
[133] *Shrops. County Rec.* No. 11, p. 2.
[134] Ibid. p. 3.
[135] Ibid.

was succeeded for a short time by his foreman, Worrall, when, Mr. Naunton having purchased the plant, the firm of Adnitt and Naunton continued to practise it, chiefly in connexion with ordinary commercial work.

Other firms in the county, as that of Woodall, Minshall & Co. of Oswestry, also apply the art to the same purpose. The daguerreotype followed closely upon the introduction of lithography, and afterwards developed into photography.

The 'process block' and 'collotype' systems are largely used by Messrs. Adnitt and Naunton in their views of Shrewsbury and other parts of the county.

A school of design was established in Shrewsbury in 1855. The first secretary was Mr. John Bowen, and the first master Mr. Oliver Williams, who had been employed by the Arundel Society to make copies of pictures and frescoes for them in Italy.

This school, now called a school of art, has been taken over by the town council, and established at Vaughan's Mansion, on the other side of the English Bridge, with the intention of giving its teaching a more technical character.

The second institution of this kind was established in 1856, when the Borough of Wenlock School of Art was founded under the auspices of the principal landowners, employers of labour, and clergy of the district. It gradually centred in Coalbrookdale, and is now called the Coalbrookdale School of Science and Art.

The students are drawn from the working classes, and represent every branch of industry in the district, and the instruction given is made as technical as possible to meet their requirements. That the school has exercised a very great, though indefinable, influence in raising the artistic tone of the productions of the neighbourhood is very evident, one proof of the good work done being that students who have received the whole of their art education at Coalbrookdale now hold responsible positions as heads of artistic departments of various works.

Mr. G. W. Shepherd, who obtained a full art-master's certificate, is at the head of the designing department of the Coalbrookdale Company. Mr. J. Bradburn occupies a similar position in the encaustic and tesselated tile works of Messrs. Maw, at Jackfield; Mr. J. A. Hartshorn, in the Salopian art works of Mr. W. Allen, at Benthall; Mr. C. Jones, at Messrs. Craven, Dunnill & Co., Jackfield; and Messrs. John Evans and Walter Jones hold important situations under the Coalbrookdale Company.

Among other students who have specially distinguished themselves are the following, who obtained national scholarships, viz. :—

Mr. J. S. Smith, who also obtained the travelling scholarship of the Goldsmiths' Company and who was appointed to the important position of art master at the South West London Polytechnic Institute, Chelsea; F. Marriott, gold medallist, head master of the School of Science and Art, Goldsmiths' Institute, New Cross; J. Bradburn, gold medallist; F. Leighton, A. Hopwood; A. S. Robertson, who obtained a bursary at Glasgow; B. J. Fletcher, head master of the Leicester School of Art.

The school has been fortunate in its masters, most of whom have left to take more important positions. The first was Mr. J. A. Mulligan, who was followed by Mr. H. Woolner, brother of the sculptor, and eventually inspector at South Kensington; Mr. Langman, who was inspector of drawing under the London School Board; Mr. Owen Gibbons; Mr. Spencer, who was head master of the Royal College of Arts; Mr. Earles, and the present master, Mr. W. H. Gates, under whose efforts the efficiency of the school has been well maintained.

Art classes in connexion with this school are also held at Broseley, Dawley, Ironbridge, Jackfield, Madeley, and Much Wenlock.

Oswestry School of Science and Art, one of the largest in the county, has been doing good work since its establishment in 1875, and has been very successful in turning out students with 'passes,' but, the secretary informs us, it is difficult to say what effect the school has had upon the manufacturing industries of the district. We learn, however, from Mr. Armytage's report for 1901, that the number of art students, as at Shrewsbury, dominates all others, numbering 233.

At Wellington, we learn from the same report, the sum of £150 has been granted by the County Council for the equipment of the new hall which the committee have taken on a lease for five years for purposes of technical instruction, and there are at present fifty-seven art students.

Other schools and classes have been more recently established at Bridgnorth, Broseley, Cleobury Mortimer, Craven Arms, Dawley, Hadley, Ironbridge, Jackfield, Ludlow, Madeley, Much Wenlock, Newport, Okengates, St. George's, Shifnal, Wellington, Wem, Whitchurch, and Wrockwardine Wood.

Mr. Armytage adds that an art class, under the Board of Education, is now established at nearly every town of importance in the county, and he hopes before long to see two or three more schools of art established with resident art masters.

At Chelmarsh, near Bridgnorth, successful attempts have been made by the vicar to restore an art which had well-nigh fallen into decay, that of wood-carving. The Rev. T. R. Seddon, on his first introduction to the old church, of which he had recently been appointed vicar, was struck by the cold and bare appearance of the sacred edifice, which the ignorance and indifference of the past sixty years had mutilated and whitewashed. Rightly reflecting that a great

proportion of the beautiful old carving was the work of local people with very few tools at their command, and little or no knowledge of drawing, and that what had been done could be done again, the vicar set himself to work to remedy the evil. Having recovered some portions of the old carvings from the ignoble uses to which they had been put in village cottages and restored them to their original positions in the church, and having decided that what was lost must be replaced, the vicar took lessons in wood-carving from a neighbouring tradesman, and invited the men and boys of the village to place themselves under his tuition and to aid him in his efforts to beautify their church. The class has gradually increased and has now attained the dignity of a carving school united with the County Council.

The wants of their own church having been supplied, and the work having excited much admiration, orders flowed in from churches round for choir stalls, reredoses, retables, pulpits, doors, and the like. The pupils are paid by the vicar for their work as soon as it is sufficiently satisfactory to be useful; and this is quickly the case, and in some instances has been accomplished in a fortnight.

The vicar of Cressage has also established a carpentry and wood-carving class. This has been carried on for five winter sessions, and much good work has been done, chiefly in carpentry, with Mr. Benjamin Jones of Belswardine Lodge as teacher.

The ancient art of glass staining,[136] of which there are so many excellent examples in Salopian churches, has also been revived in Shrewsbury.

The names associated with glass painting and glass staining best known to Shropshire are those of the late David Evans and John Davies, both of Shrewsbury.

Specimens of the work of the former are to be seen in the restored cathedrals of Winchester and Lichfield, in most of the churches of Shropshire, and in churches in all parts of the kingdom.

The works of Mr. John Davies are to be seen in many churches of the county, and in those of Sts. Mary, Chad, Julian, and George, and the Abbey Church at Shrewsbury, Bishop's Castle, Condover, Dawley, and Jackfield, as well as at Kidderminster, Wolverhampton, Crawley in Sussex, and in many others in different parts of the kingdom.

# RIVER AND CANAL INDUSTRIES

One important form of industry which flourished greatly in the latter part of the eighteenth and in the first half of the nineteenth century has subsequently become altogether extinct; that is, the water traffic by means of the Severn and canals. Navigable rivers in early days conferred great privileges upon those who lived and manufactured upon their banks. In 1635–6 this fact was recognized by Mr. Sandys of Fladbury, Worcestershire, who brought forward a project for making a part of the Teme, lying towards Ludlow, navigable for boats,

> whereby the said counties (of Salop, Stafford, Gloucester, &c.) may be better supplied with wood, iron, and pit coals, which they want.[1]

The scheme, however, fell through in consequence of the Civil War. The Severn was the great highway of communication with the coast in one direction, and with towns like Shrewsbury, and afterwards, by means of canals, with Liverpool on the other. The Shropshire, Ellesmere, and Shrewsbury Canals, sweeping extensive districts, united the Severn, the Mersey, and the Dee, and the rival ports of Liverpool and Bristol. Shrewsbury, Coalbrookdale, Broseley, Bewdley, and afterwards Stourport and Gloucester, were the great centres through and from which the traffic flowed; lead, iron (crude and manufactured), bricks, tiles, pottery, and pipes being among the exports, and hay, hops, cider, timber, and groceries among the imports. A fair representation of the Severn traffic in the middle of the eighteenth century is given by a writer in the *Gentleman's Magazine* for 1758, a period at which the Broseley ironworks and collieries may be said to have been in full operation. The writer says:—

> This river, being justly esteemed the second in Britain, is of great importance on account of its trade, being navigated by vessels of large burden, more than 160 miles from the sea, without the assistance of any lock; upwards of 100,000 tons of coal are annually shipped from the collieries about Broseley and Madeley, to the towns and cities situated on its banks, and from thence into the adjacent countries; also great quantities of grain, pig and bar iron, iron manufactures, and earthern wares, as well as wool, hops, cyder, and provisions, are constantly exported to Bristol and other places, whence merchants' goods, etc., are brought in return. The freight from Shrewsbury to Bristol is about 10*s.* per ton, and from Bristol to Shrewsbury 15*s.*, the rates to the intermediate towns being in proportion.
>
> This traffic is carried on with vessels of two sorts; the lesser kind are called barges and frigates, being

[136] Glass for windows and black bottles was manufactured at Donnington Wood in 1816 (Nightingale, *Engl. Topog.*), and William Nicholas of Balderton Hall, when he entered the timber trade, used some of his charcoal to work a glass-house (Gough, *Antiq. of Myddle*, 59).

[1] *Cal. S.P. Dom.* 1635–6, p. 79.

from 40 to 60 ft. in length, have a single mast and square sail, and carry from 20 to 40 tons; the trows,[2] or larger vessels, are from 40 to 80 tons burthen; these have a main and top mast, about 80 ft. high, with square sails, and some have mizen masts; they are generally from 16 to 20 ft. wide and 60 in length, being when new, and completely rigged, worth about £300.

Their number being greatly increased of late, I caused in May, 1756, an exact list to be taken of all barges and trows upon the River Severn, whereby the increase or diminution of its trade may be estimated in future times, which were as follows:—

| Belonging to | Owners | Vessels |
|---|---|---|
| Welchpool and Pool-stake | 4 | 7 |
| Shrewsbury | 10 | 19 |
| Cound and Buildwas | 3 | 7 |
| Madeleywood | 21 | 39 |
| Benthall | 8 | 13 |
| Broseley | 55 | 87 |
| Bridgnorth | 47 | 75 |
| Between it and Bewdley | 8 | 10 |
| Bewdley | 18 | 47 |
| Between it and Worcester | 7 | 13 |
| Worcester | 6 | 21 |
| Between it and Upton | 2 | 2 |
| Upton | 5 | 5 |
| Tewkesbury | 8 | 18 |
| Evesham upon Avon | 1 | 2 |
| The Hawe | 3 | 4 |
| Gloucester | 4 | 7 |
| | 210 | 376 |

The writer adds:

Since taking the above list, the number is advanced to near 400 vessels; they are mostly navigated with 3 or 4 men, who being generally robust and resolute, may be esteemed a valuable nursery of Seamen.[3]

Broseley, in fact, at that time had by far the largest share of the traffic. Towards the latter end of the century efforts were made by Mr. Telford to render the river navigable at all times of the year for vessels drawing 4 ft. of water, from Worcester to Coalbrookdale. He proposed to obtain a sufficient depth for that purpose by the erection of thirteen or fourteen weirs between those places; and also recommended that the depth should be obtained below Diglis by dredging and correcting the natural channel of the river. The Stafford and Worcester Canal Company, joined by the iron manufacturers of Shropshire, applied in the year 1786 to Parliament for powers to carry out Mr. Telford's recommendations so far as they related to the portion of the river described in the bill as 'from Meadow-wharf, Coalbrookdale, to the deep water at Diglis, below the city of Worcester.' The bill was lost owing to the dislike of the carriers to pay toll at all seasons of the year, and also owing to the strong feeling of objection on the part of the public to the erection of locks and weirs. As it was, there were often three, four, and five months in the year when barges could not navigate the river with a freight sufficient to defray the expenses of working them; indeed, instances occurred in which for two months only of the twelve could the river be advantageously worked. The Severn carriers, too, contributed to the decline of their traffic by malpractices that were notorious. They were a distinctive class of men, primitive in their habits, great waiters on Providence, standing for months looking into the stream, watching for a 'fresh' to carry them down; some were hard drinkers, heavy swearers, given to gasconade and good living. They were clever in playing tricks with their freight. They often got game, and frequently dined off fowl that, somehow or other, found their way on board as they lay at anchor for the night. Besides being tolerable shots, they were clever at staving a cask, taking out its head, replacing a hoop, and abstracting buckets of cider, perry, porter, wine, or spirits. These tricks refer to the back carriage of groceries, &c. by the men, who managed to elude the vigilance of the owners. But the coal-owners, getting their cargo at Coalport, had an allowance of $7\frac{1}{2}$ cwt. per boat-load—five tons of coal; yet complaints were continually made at Stourport, Worcester, and Gloucester of short weight, and tricks to deceive by false tickets of weight were not unfrequently tried and exposed. The vessels were drawn against the stream by strings of men linked to ropes by loops or bows, who were called bow-haulers. It was slavish work, and Richard Reynolds was so struck with the hardness and unfitness of the practice that he obtained an Act of Parliament for the construction of a towing-path, in order that horses might be substituted. Sometimes, when a favourable wind blew against the stream, vessels with all sails set would make good progress without further assistance; and it was a pleasing sight to see the larger ones, the trows, sailing along the valley. It was not unusual for one of these, if the cargo suited, to go from Broseley to the Bristol Channel, and 'coast it,' going up the Thames to London.

An invention which exercised a great influence upon the trade of the district was the construction by William Reynolds in 1778 of inclined planes as a substitute for locks to connect and work canals of different levels.

Canals had, of course, been in use for ages, whilst locks were of more recent invention; but these did not suit Mr. Reynolds, and he invented the Inclined Plane, to overcome the great inequalities of ground existing between the mines and his furnaces. Bringing

[2] Trow, a wide, flat-bottomed barge. Hartshorne, *Salopia Antiqua*, 600. Trowman, the sailing master or captain of a trow, a Severn trading vessel. *Shrops. Word-Book*, 454. William Tarleton of Bridgnorth is designated 'Trowman' in his will proved in 1692, Exch. Dep. by Com. 4 & 5 Will. and Mary, Hil. No. 22.

[3] *Gent. Mag.* xxviii, 277–8 (1758).

his navigable canal to the brow of the bank near his works, he made a small lock, from the bottom of which he constructed an inclined plane, with a double line of rails for the full and for the empty boats, which were floated in upon carriages, borne by large wheels in front and small ones behind, in order to retain the boats in horizontal positions. The bottom of the lock being inclined at the same angle as the rails, the boat, upon the water being withdrawn, settled down upon the carriage and began the descent, checked by a strong rope from a large barrel, and was received at the bottom by a short canal on a level with the works.[4]

Fulton, who has been erroneously credited with this invention, himself acknowledges that it belongs to William Reynolds.

As local prejudices opposed the Duke of Bridgewater's Canal in the first instance, prejudices equally strong as firmly adhered to the principle upon which it was constructed ; and it was thought impossible to lead one through a country or to work it to any advantage, unless by locks, and boats of at least 25 tons, till the genius of Mr. Wm. Reynolds, of Ketley in Shropshire, stepped from the accustomed path, constructed the first inclined plane, and introduced boats of 5 tons. This, like the Duke's canal, was deemed a visionary project, and particularly so by His Grace who was partial to locks ; yet this is also introduced into practice, and will in many cases supersede lock canals.[5]

Soon afterwards a company was formed and an Act of Parliament obtained for the construction of the Shropshire Canal, which was completed in 1792. Having the same difficulties of surface to contend with, the company adopted the inclined plane, but substituted a small steam engine for the upper lock, to place the boat and its carriage on the line of descent. Commencing at Donnington Wood, the boats had to traverse an inclined plane 960 ft. in length and 120 ft. in ascent. This canal joined the Ketley one and branched off at Stirchley over an aqueduct to the top of Coalbrookdale in one direction, and to Wind Mill Farm in another, where there was a long descent, but at no great angle, to the canal going to the Hay, near Coalport. Here its traffic was conveyed to the left bank of the Severn by means of an inclined plane, 1,050 ft. in length, and 207 ft. in descent, constructed by Mr. Williams, 'Schemer Williams,' as he was called.

A company was next formed, and an Act of Parliament obtained, to make a canal from Shrewsbury, to be called the Shrewsbury Canal. The original plan, published in 1793 by George Younge, proposed to go from Shrewsbury, on a level, to Longden, 11 miles, and to join Mr. Reynolds's canal at Wombridge, at a distance of 5 miles, with a rise of 147 ft. ; by this scheme uniting the district with Wolverhampton, by means of a canal branching off at Wappenshall ; and the Severn with the Mersey by others. The rise of 147 ft. of course included the 75 ft. of the present incline near the Shropshire Company's works at Hadley.

The local transport of coal and iron was assisted by a short canal made by the marquis of Stafford on his own estate in 1782 ; and was greatly facilitated by the formation in 1788 of the Shropshire Canal with a short branch from Oakengates to the works at Ketley. This branch was the private property of the Ketley Company, and upon it was constructed, to plans prepared by William Reynolds, the elder son of Richard Reynolds,[6] an inclined plane to pass down a declivity 66 ft. in perpendicular height.

The canal extended from Donnington Wood, through Oakengates and Stirchley to the River Severn at a part to which the name of Coalport was then given. A branch was made from near Stirchley by Dawley and Lightmoor to Horsehay and Coalbrookdale. There were four inclined planes worked by steam engines in the main canal, and one without an engine at Coalbrookdale. A large increase in the sale of coal from Coalport to the towns and villages upon or near the river resulted and continued for years. The extension of the canal to Shrewsbury was effected a few years later, to the great advantage of Shrewsbury.

The Staffordshire and Worcester Canal, joining the Severn at Stourport, and the Grand Trunk or Trent and Mersey Canal, were made in 1766, but the difficulties and delays in transport were still very great. This had to be done largely by wagons. To reach London, articles were sent by wagon to Burton-on-Trent, or by river to Stourport and thence by canal to Burton, thence by river to Gainsborough, whence they were shipped to London ; or they were forwarded by the Severn to Bristol, whence they were shipped to London.

Frequently pig-iron and castings intended for Liverpool were sent down the river to Bristol and thence shipped to their destination.

For the improvement of the waterway of the river, and to expedite the return of barges, by using horses for hauling or towing them up the stream, an Act of Parliament was obtained in 1771 empowering a Board of Trustees to make and maintain a towing path for use of horses between Bewdley and Coalbrookdale. Much opposition was made by the barge and riverside men, to whom restraint of their practices was distasteful, so that it was suggested that the protracted delays had impaired the powers of the Act. A subscription to provide £5,000 for the

[4] Randall, *Salopian Mag.* Oct. 1877.
[5] Fulton, *Treatise on Canal Navigation*, 6.
[6] Plymley, *Shrops.* 291 ; Rathbone, *Mem. Reynolds*, 165.

cost of the needed improvements was made by the older firms in 1797, and in 1799 a new Act was obtained confirming the powers given by the first Act. For the maintenance and improvement of the path, tolls were charged upon the weight of articles carried by each barge down or up. In 1803 a similar Act created a separate Board for providing and maintaining an extension of the towing path from Bewdley to Worcester.

The canal system at the present day comprises the Donnington, the Shropshire Union, the Shrewsbury, the Birmingham and Liverpool, and the Chester and Ellesmere.[7]

## CLOTHMAKING

The antiquity of the cloth trade in the county is attested by various references in ancient records to the neglect of certain towns or boroughs to keep the assize of cloth. At Bridgnorth, for instance, which in Leland's time still 'stood by clothing,' it was reported in 1203 that the town had failed to keep this assize, a failure which rendered any community thus transgressing liable to a fine, fixed in this case at 4 marks.[1] In the same year Andrew Fitz Milo of Steventon was amerced 20*s.* for a breach of the same assize.[2] In 1292 Laurence de Ludlow and twenty-two others were presented for selling cloth contrary to the assize at Shrewsbury.[3] In the acute crisis of their trade rivalry in the seventeenth century, to which references will be made later, we find Shrewsbury reminding the citizens of Oswestry that the former city had enjoyed a free market for all merchandise, including cloth (*pannus crudus*), since the reign of King John.[4] In this city, it is interesting to note, a weaver named Ludovic Lye obtained from John Hoord a lease of a garden in Murivance Street in 1481, the area being measured by 19 woollen yards.[5]

The ancient craft of the fuller, so indispensable in mediaeval times to that of the clothworker,[6] took its due place in the industrial economy of the county. In 1255 the abbot of Combermere had a fulling mill at Chesthill worth 30*s.*[7] At Cleobury Mortimer in 1329 7*s.* was assigned from fulling mills to support lights in the church.[8] At Cleobury Barnes in 1363 a fulling mill was unoccupied.[9] At the same place in 1366 rent was received for 'the new fulling mill late called the Maltmill.'[10] 'The pasture behind the walls' of Shrewsbury was evidently used for fulling operations at an early date, as reference is made to the same as a bleaching ground in an order of the corporation in 1596, whereby this pasture was to be 'set to graze for six years, provided all persons were to have liberty to walk, shoot, or bleach clothes there.'[11]

As in every other clothworking centre of the kingdom, the interests of the wool trade were of marked municipal importance. In 1265 Henry III granted to the burgesses of Shrewsbury that no merchant of wools should purchase the same within the county, but in the market towns thereof. At a later date, from 1270 to 1274, when the export of this commodity beyond the seas was permitted only to those who had obtained letters patent enabling them to do so under licence, the number of sacks being generally limited to twenty, we find no fewer than 908 such licences granted to merchants of Ludlow. Of these, Nicholas de Ludlow[12] would appear to have been a leading personage, few in England being allowed to export wool on such an extensive scale. By twelve pairs of letters he was permitted to export 240 sacks. The number allotted to Philip de Wygemor of Ludlow was twenty, and to Laurence Colet forty. In 1273–4 Nicholas Alriche of Ludlow was exempted from the general prohibition to carry wool to London or elsewhere in England.

The burgesses of Bridgnorth having complained that those of Shrewsbury would not allow them to buy undressed cloth (*pannus*

[7] Kelly, *Dir.* (1905), 2.
[1] Eyton, *Antiq. Shrops.* ii, 298. [2] Ibid. v, 70.
[3] Ibid. 290; Assize R. 741, m. 46.
[4] *Rec. Corp. Oswestry.*
[5] *Shrops. Arch. Soc. Proc.* ii (Ser. 3), (1891), p. 277.
[6] 'Cloth that cometh from the weaving,' writes Piers Plowman, 'is not comely to wear, Till it be fulled under fote, or in fulling stocks, Washen well with water, and with teasels cratched, Towked and teynted, and under taylour's hands.' The fuller's duty was defined by statute 4 Edw. IV, cap. 1, as 'fulling, rowing, or teaseling of cloth.'
[7] *Rot. Hund.* (Rec. Com.), ii, 55.
[8] Mins. Accts. bdle. 965, No. 10.
[9] Ibid. No. 12.
[10] Ibid. No. 17. There was a fulling mill in Longnor, known as the Walkmill; Hartshorne, *Salopia Antiqua*, 607. Gilbert de Lacy owned a fulling mill at Ludlow in the thirteenth century; Wright, *Hist. Ludlow*, 98.
[11] *Shrops. Arch. Soc. Trans.* ii, 163.
[12] This 'merchant of Sillop' (*Cal. Pat. R.* 1272–81, p. 46), elsewhere styled 'the King's merchant' (ibid. p. 256), seems to have acted on various occasions as 'attorney of the English merchants' in difficult situations which arose from time to time in his day with regard to the wool traffic between his own and foreign countries, especially with Flanders.

*crudus*) or raw hides in their markets,[13] a jury was empanelled 25 November, 1223, at Westminster to try the cause, the right of Shrewsbury being clearly established to refuse any person not being in lot and scot with them to buy in their town. Shrewsbury further strengthened this right by a charter obtained at Michaelmas 1227.

In 1505 the bailiffs and burgesses of Bridgnorth ordered that no 'northern man' should bring any northern cloth, 'being whytis,' to town for sale for two years.[14]

In 1565 the drapers, cottoners, and frizers of Shrewsbury obtained 'a monopolish Act,'[15] to restrain the buying and selling in that town of Welsh cloth, and lining, only to persons free of the Drapers' Company. This Act is of interest, as giving some idea of the state of the cloth industry at that date. 600 shearmen or frizers were employed, the goods specified as being manufactured in the city at that time being friezes, cottons,[16] and plains.[17] The Act, it would appear, however, failed somewhat of its purpose, and was accordingly repealed at a later date.[18]

In consequence of complaints lodged regarding the Welsh cloth brought to London in 1601, the Privy Council issued orders to the high sheriff and justices of Salop that the use of tenters for the purpose of stretching defective cloths should be forbidden, and in order to ensure compliance with these directions, 'all ropes, rings, and wrenches, heads, and lower bars of tenters, and all other means of stretching cloth either in length or breadth, should be abolished and quite taken away.'[19]

Thomas Hill filled the office of alnager at Ludlow in 1616, when cloth was 2*s.* 10*d.* per yard.[20]

In 1642 Mr. Humphrey Walcot of Walcot founded an industrial school to teach thirteen poor girls of Lydbury North to spin flax and wool in an outhouse, a widow being engaged to teach them.[21]

The privileges of the drapers of Shrewsbury were many, and their rights were rigorously enforced. No person was permitted to buy within the town of Salop any cloth unfulled unless he were in scot and lot, and assessed and tallaged with the burgesses.[22] No person in Shrewsbury was permitted to buy any Welsh cloth in Oswestry, Pool, or the Marches adjoining on pain of fine or imprisonment at the discretion of the bailiffs.[23] The cloth was only to be bought at the place and time appointed of the makers, the seller paying ½*d.* toll for every piece, the buyer paying for sealing the same.[24] Persons not free of the drapers might only buy for household purposes.[25] Only such as had served the apprenticeship of seven years were permitted to buy, on pain of 6*s.* 8*d.* fine.[26]

By ordinances drawn up 20 November, 1611, not more than two apprentices were to be taken by any draper, the fine for transgression of this rule being 40*s.* for every month for which it was infringed. Freemen must serve seven years, and be over twenty-four at the date of their admission.[27] A fine of 7*d.* was imposed for attending a meeting without the proper gown, whilst absence from the burial of a brother was punished by one of 12*d.*[28]

The records of the corporation of Oswestry from 1619 to 1624 show that that town and Shrewsbury were bitter rivals for the monopoly of the Welsh cloth trade at that date. In the first of these years (a period, it may be noted in passing, of the commencement of a grave decline in the cloth industry throughout the kingdom, as may be gathered from the State Papers of the time), we find the drapers of Shrewsbury lodging a complaint with the council against Thomas Matthews and John Dito, mercers of their town, and also against Thomas Davies, a merchant of London, who, having obtained the freedom of Oswestry, as it would appear, 'deceitfully,' proceeded to intermeddle with the orders of the council confining the trade in Welsh cottons to Shrewsbury by selling these goods, bought in Oswestry, privately in London, thus damaging not only the trade of one rival, but of the other as well.[29] Drawn together in this solitary instance by a common wrong, both towns prayed that Davies might be restrained.[30] So profitable was the traffic, however, in which the offender was engaged, that, first pleading his right to be allowed to trade as a freeman of London,[31] then as a freeman of Oswestry, Davies finally offered to resign the freedom of London in order to be permitted to continue his

[13] Pleas of the Crown, Mich. 7 & 8 Hen. III, m. 24.

[14] Leet Bk. Bridgnorth, fol. 59. 'The cloathing trade' at Bridgnorth was decayed in Leland's time. *Shrops. Arch. Soc. Trans.* iv, 137.

[15] 8 Eliz. cap. 7.

[16] Cottoning was the art of raising the nap of cloth with teasels and then shearing the same to a uniform length; *Shrops. Arch. Soc. Trans.* viii, 190.

[17] Plains was the term used to designate cloth simply woven without after-dressing; ibid.

[18] 14 Eliz. cap. 12.

[19] *Hist. MSS. Com. Rep.* xv, App. pt. x, 62.

[20] *Shrops. Arch. Soc. Proc.* viii, 6.

[21] *Shrops. Parish Doc.* p. 55.

[22] By their charter, dated 1 Edw. IV, 1461–2, 'very great and unusual privileges,' we are told, were conferred upon the drapers of Shrewsbury. '*Peramplae libertates concessae pannariis villae Salop.*' Add. MSS. No. 21023, fol. 198; Chart. 11 Hen. III.

[23] Ibid. 1 Edw. IV, Lib. A. fol. 89.

[24] Ibid.

[25] Add. MSS. No. 21023, fol. 198.

[26] Ibid. 201.

[27] Ibid. fol. 228.

[28] Ibid.

[29] *Cal. S.P. Dom.* 1619–23, p. 88.

[30] Ibid. 89.

[31] Ibid. 116.

dealing in Welsh cloths.[32] To this suggestion, however, the citizens of London, who possessed the ancient right of buying in the Welsh markets, offered strenuous opposition.[33]

In 1621 the clothiers of North Wales entered into the quarrel, requesting that the staple for the sale of Welsh cottons might be re-established at Oswestry, the drapers of Shrewsbury trying to draw all the trade to that town, which would be their ruin.[34] In the following year Shrewsbury retaliated by representing that the town was 'fallen into great poverty by the decay of the trades of buying and working Welsh cloths owing to the late restraint of buying of Welsh cloths.' The Welsh clothiers were also involved, according to the citizens of Shrewsbury, in the losses sustained by the latter, the clothiers 'thinking it more beneficial to sell their cloths at such markets as they pleased.'[35] Oswestry declared at this juncture that it 'had no reason but to stand indifferent.'[36] A petition from the bailiffs and burgesses of Shrewsbury was next presented to the council, praying that the latter would restrain persons from buying cloths elsewhere than at Oswestry. Two persons named Charlton and Harbury, countenanced by the city of London, were labouring to 'entrade' themselves into buying Welsh cottons at Oswestry, contrary to the council's orders. Complaints were also rife of the factors of the London merchants buying and engrossing Welsh cloths and friezes and exporting the same before they reached the appointed market at Oswestry, ready buyers being found in the drapers of Whitchurch, Chester, and Coventry. William Thomas, clothworker, factor to John Byard of London, infringed the orders of the council by exporting cloths thus forestalled to Rochelle, Bordeaux, and St. Malo.[37]

In 1622 the high sheriffs and justices of Denbighshire, the trade of which was confined to cottons and friezes, stated their opinion that a restoration of the market to Oswestry would undoubtedly revive the trade of both Wales and Oswestry.[38]

On the report of the attorney-general, and taking into consideration the expressed general desire of the Welsh clothiers in favour of Oswestry market, an order in council restored to Oswestry its 'ancient mart,' with provisos that no embargo should be laid upon any sales therein, and that the Welsh clothiers should be free to buy from clothiers at their own houses, or in their markets.[39] Shrewsbury received this order with a bad grace, the drapers announcing that, in spite of the prohibition, they would continue to buy in their own market.[40]

[32] *Cal. S.P. Dom.* 6919–23, p. 124. [33] Ibid.
[34] Ibid. 259. [35] *Shrops. Arch. Soc. Trans.* iii, 134.
[36] Ibid. [37] Ibid. 135.
[38] *Cal. S.P. Dom.* 1619–23, p. 379. [39] Ibid. 413.
[40] Ibid. 463.

Shrewsbury cloth-market was held on Thursdays, the day having been evidently changed from Wednesdays in 1628, when the poor clothiers of North Wales declared that it was easier 'and less chargeable' to go to Oswestry than to Shrewsbury to sell cloths, Wednesday being market-day at Dolgelley and Machynlleth, noted centres of production for the woollen yarn so largely used in the manufacture of coarse cloths.[41]

Oswestry was 'the chief and ancient mart of Shrewsbury for the sale of webs and flannels.'[42] The Fraternity of Weavers in the former town was incorporated in 1262 by a grant from John Fitz Alan, lord of Arundel.[43] Apprentices were bound for seven years, and paid 2*s.* 6*d.* on being enrolled. On 'setting up' the fee was 40*s.* On taking up a freedom 3*s.* 4*d.* was paid. This ceremony took place on Corpus Christi Day only, that day being a favourite one with gilds throughout the kingdom in mediaeval times.[44] In 1597 the Fraternity excluded from apprenticeship all French, Flemings, and Scots. Masters transgressing this rule were find 100*s.*[45] Every journeyman not apprenticed in the town paid 6*d.* on entering in to be a free journeyman, and 2*d.* quarterly. Every journeyman apprenticed in Oswestry paid 2*d.* a quarter, 'no more,' and every master 4*d.* a quarter. The company was governed by two warders, two stewards, and from four to six members chosen from the company.[46]

'The chief support of Oswestry' in Dr. Pococke's time was, he tells us in his *Travels*, 'its markets,' as being the place to which all the 'Welch Webbings' made in the county were brought. There they 'were loaded on wagons and carried to Shrewsbury.' The material, as described by the observant traveller, was 'a thick sort of flannel, of which the soldiers' clothing was chiefly made.' It was sold by the ell, which was 2½ yds. and 6 in., which could be drawn out to 3 yds.; the coarser kind was originally sold at 1*s.* 6*d.* an ell, but by the eighteenth century the price had risen to 2*s.* and later to 4*s.* an ell.[47]

As elsewhere in the kingdom at this date, the method of carrying the bales of web was by packhorse.

> Troops of hardy ponies, each with a halter of twisted straw, and laden with two bales of cloth, poured into the market-place in the morning, driven by stout Welshmen in their country coats of blue cloth and striped lindsey waistcoats.[48]

[41] *Shrops. Arch. Soc. Trans.* iii, 136.
[42] *Rep. Hand-loom Weavers*, 1840, p. 553. 'Oswestry standeth,' according to Leland, 'by the sale of cloth made in Wales'; *Itin.* iv, 99.
[43] Eyton, *Antiq. Shrops.* vii, 253; *Shrops. Arch. Soc. Trans.* ii, 185.
[44] *Bye-gones*, 28 Nov. 1888, p. 275.
[45] Ibid. [46] Ibid.
[47] Pococke, *Travels* (Camd. Soc. Publ.), ii, 15.
[48] Owen and Blakeway, *Hist. Shrews.* i, 511.

Oswestry cloth-market was held on Wednesday, the chief traffic being in flannel and Welsh webs. There was, we learn, no special hall for sale of the cloths, though the trade was confined to one or two streets, in which the goods had to be sought for 'in any garret, stable, parlour, or kitchen.'[49]

In addition to the flannel which was purely Welsh, Oswestry produced a variety of its own, made from the finer sort of wool, the material being three-quarters of a yard wide, and sold at Oswestry for from 10*d.* to 15*d.* per yard. In a bill of cloths bought for the beadle of Oswestry in 1741, 3½ yds. of 'flannen' were purchased for 2*s.* 4*d.*[50]

The cloths brought to market in Shropshire from the Welsh cloth-making centres of Merionethshire, Denbighshire, and Montgomeryshire, were of two kinds: strong, or high country cloth, and small, or low country cloth; Merionethshire, especially Dolgelley and Machynlleth, was famous for the former variety, which was seven-eighths of a yard in width, whilst Denbighshire, within the parish of the Glynn, Llangollen, and Combar, was engaged in the manufacture of small cloth, the industry being carried on at cottage looms.[51] The high country cloth, after being bought by the drapers of Shrewsbury, was handed over to their shearmen to have the wool raised and sheared by them; or in some instances it was sent to the fulling mill to be thicked. It was then made up for export into bales, some of which contained 2,000 yds. The ultimate markets for these goods were Holland, Germany, and America. Small cloth, which was a yard narrower, was frequently dyed before export, chiefly to the West Indies, where it was used as clothing for the slaves. This cloth was largely manufactured in the Welsh farm-houses.[52] The best small cloth sold at from 16*d.* to 17*d.* per yard, an average price being 14*d.*[53] The coarser sort of high country cloth abounded with long white hairs incapable of taking the dye, called kemps. This was made of the coarser part of the very long wool grown round Oswestry.[54]

The cloth bought at Oswestry and the two Welsh markets of Welshpool and Montgomery[55] was brought to Shrewsbury, and there handed over by the drapers to the shearmen or cloth-workers to be dressed, and to the dyers (hewsters) to be coloured.[56]

The cloth workers and shearmen of Shrewsbury were incorporated in the reign of Edward VI. Their feast day was 6 June, which was kept as such by the apprentices until 1588. Six hundred shearmen were employed in Elizabethan times in dressing Welsh cloths. Their hall stood in Milk Street.

Effigies of Edward IV, and sometimes of Bishop Blaise, were carried by the shearmen in procession at the annual 'Shrewsbury Show,' the bishop wearing a mitre of wool, and a full-made shirt for lawn sleeves.[57]

Among the various causes which contributed to the decay of the Welsh web industry, signs of which began to be evident about 1790, were the improvement of the roads in Wales, and the consequent opening up of new markets for the cloth-makers of Merionethshire and other centres of the trade. In 1795 Shrewsbury had begun to recognize that its prosperity in this direction was seriously impaired, and in 1803 the room in which the drapers were accustomed to transact their business was given up.[58]

Owing to the depression in trade, the cotton industry ceased at Shrewsbury in 1817. Old houses where the art of hand-loom weaving was practised still remain in the Abbey Foregate, Upton Magna, and other places, the names of the men who threw the shuttle being still remembered by the old people. These county weavers of the past have been immortalized by George Eliot in *Silas Marner*.

The cottage hand-looms at Clun were remembered until recently, also the dyeing mill which was long in use at the same place.[59]

In 1840 Ludlow had one small woollen factory with five hand-looms, the output comprising flannels, linseys, blankets, table-covers, and house-cloths.[60]

Until about fifty years ago the staple trade of Market Drayton was hair-weaving. The material when made was used not only for hair-seated furniture, but also for hair sieves. Within the memory of the older inhabitants of the town there were at least five factories devoted to this industry; but the provisions of the Factory Acts which restricted the employment of juvenile labour and other causes have made the industry dwindle

[49] Plymley, *Agric. Shrops.* 334.

[50] *Bye-gones*, 13 Nov. 1889, p. 253.

[51] Aikin, *Tour in North Wales*, 74.

[52] Ibid. [53] Ibid. [54] Ibid. 75.

[55] In 1746 William Harrold, cutler, and Samuel Harropp, brazier, bought flannel not being free of the drapers, at the market of Welshpool and Montgomery. Their prosecution, however, at the instance of the drapers, failed; Add. MS. 21203, fol. 208–9.

[56] The dyeing of flannels and webs was a great and ancient Shropshire industry, which was chiefly carried on at Shrewsbury, a noted dye-house being that of Leebotwood, near Dorrington (Aikin, *Tour*, 81), the small cloth being the variety chiefly used for dyeing. Richard Beynes, hewster, was a burgess of Shrewsbury in 1520 (*Shrops. Arch. Soc. Trans.* v, 122).

[57] A Shrewsbury token of 1795, issued by a woolcomber, bears the legend 'Success to the woollen manufacture,' and on the reverse Bishop Blaise, patron of wool-combers, from the fact of his having being martyred, according to tradition, by having his flesh torn by iron combs; *Salopian Shreds and Patches*, 4 Oct. 1882.

[58] Owen and Blakeway, *Hist. Shrews.* vi, 512.

[59] *Bye-gones*, 30 Oct. 1901, p. 210

[60] *Rep. Com. Hand-loom Weavers*, 1840, p. 542.

almost to vanishing point. A few old operatives still manufacture the hair-bottoms for sieves, working in their own homes, so few, however, that the supply is unequal to the demand.

In 1828 coarse linen cloth for packing hops and wool was being made at Church Stretton by the poor of the town.[61] Rugs and woollen yarn are now being manufactured at the Carding Mill by Richard Williams.

Linen is also made by Mr. John Jeffreys at Llanymynech.

Although Bridgnorth still remains an agricultural town, it has a branch of manufacture which for many years has been one of the chief sources of its prosperity, and by which it has become very widely known both at home and abroad. It is difficult to ascertain the exact date when the manufacture of carpets was first introduced, but old buildings are pointed out in various parts of the town in which, after the manner of those days, hand-looms were set up, and a small trade carried on. Kidderminster, 14 miles distant, was then the centre of the carpet trade, and there can be no doubt that a great strike in that town led to the introduction of this industry into Bridgnorth at the beginning of the last century.

The carpet works of Messrs. H. & N. Southwell, Ltd., are situated on the banks of the Severn, having a frontage of about 200 yds. at a spot known as 'The Friars,' the site of a Cistercian Monastery, many interesting remains of which have been brought to light in the course of the building operations rendered necessary by the extension of the works. The whole area of the ground purchased by Mr. Southwell in early days has now been covered in and filled with machinery of the most modern kind. When it was determined to present the late queen with a throne-room carpet on the occasion of the Diamond Jubilee, this was made in Bridgnorth, where, as well as in the London house, a large staff of designers is employed. 'The Friars' Works have for many years enjoyed a reputation for excellency of quality and artistic merit, and are now employing between 500 and 600 people, who, with their families, form a considerable portion of the population.

Up to the year 1857 carpets had been made by hand-loom only, but the introduction of the power loom in that year caused a complete revolution in the trade. Nearly the whole of the then existing factories became useless, and it was necessary to erect a new mill suitable for the reception of these looms. At that time, what are known as Brussels and Wilton or velvet pile carpets only were made at The Friars' Works, but afterwards a great change came over the trade, caused by the introduction of a new loom from America for the manufacture of a deep-pile Axminster carpet, and the Messrs. Southwell were one of the five firms who shared the right to make them. The present company has been fortunate in obtaining valuable patents for improvements in these looms, and these now form a very important branch of the trade. The last extension embraced the erection of entirely new dye-works, in which steam power has superseded the old methods of dyeing by hand.

Another historical building, now known as Pendlestone Mill, has been utilized for manufacturing purposes by Messrs. Roger Brinton & Co. of Bridgnorth.[62] The mill, which stands at the embouchure of the Worf on the River Severn, was formerly worked by a large water-wheel, but steam is now employed in the production of carpet-yarn, worsted, and hosiery. The weekly output is of combed wool 6,000 to 6,500 lb., and of yarn 3,600 to 4,000 lb. About sixty hands are employed. The proprietors own similar mills at Kidderminster.

The Pale Meadow Mills of Messrs. Thomas Lea, Ltd., are situated on the east bank of the Severn, in the Low Town, Bridgnorth. Worsted spinning is carried on here by machinery adapted for spinning carpet, cloth, and hosiery yarns.

There are 6,500 spindles, which are capable of spinning 9,000 lb. of yarn (equal to the fleece of 1,300 sheep) per week. When the mill is working full time, employment is given to 120 persons. In the 'blend' room are piles of wool, some of which contain 20,000 lb. After undergoing the initiatory process of willeying, washing, and drying, the wool presents a white fleecy appearance. The next step is carding, a process accomplished by machines of beautiful mechanism, which thoroughly open out the wool fibres and lay them side by side, collecting them into an even and continuous ribbon. After being combed, the wool is passed on to the 'drawing,' which places the fibres in a straight, opened-out 'sliver,' an arrangement which gives the worsted thread its neat finished appearance. The reducing and 'roving' boxes still further draw out the sliver into a spongy roving, which is taken to the spinning frame, where it is spun to the various counts required, and afterwards twisted and folded into its finished state, then reeled into skeins, hanked, bundled, and packed ready for delivery to the manufacturer of cloths, carpets, or hosiery.

[61] Pigot, *Commercial Dir.* 675.

[62] At the foot of the 'High Rocks,' about a mile north of Bridgnorth, a red sandstone castellated structure was built in 1845 by Thomas Charlton Whitmore, the squire of Apley, on the site of the Old Town's Mills, given by Henry III in 1227 under the great seal to the burgesses and their heirs for ever, to grind their batches, and it is curious to note a reservation made by the king that 3 qrs. of wheat were to be given to the hermit on the Wrekin, so long as he continued to be a hermit thereon.

# TANNING

The importance of the tanning industry in the county belongs rather to the past than to the present, although it has been pointed out that down the Severn valley from Shrewsbury to Worcester there is still a succession of tan-yards, all making old-fashioned bark-tanned leather, the high repute of which is no doubt largely owing to the pure water and the clean bark which are available.[1] Many of the small tan-yards which were dotted about in country places all over Shropshire until the last century have, however, been done away with, the reason being not far to seek. In olden times the tanner was a useful man in a country place. He not only bought bark on the spot, but also the local butchers' hides; and he sold his leather, when tanned, to the local shoemaker, who made shoes for all the country round. The country shoemaker is now a thing of the past; railways bring hides from all quarters, and take away the leather; they also convey to the tan-yard a great deal of material which has practically superseded the native bark.

The cordwainers' craft existed long before the tanners', the latter being concerned with the general preparation of leather only, whilst the cordwainers dealt with the entire process from dressing the raw skins to the manufacture of the finished article, slipper, boot, or buskin.[2] The craft was certainly in existence prior to the granting of the charter which seems to have merely confirmed their rights and privileges.[3] The fraternity came into frequent conflict with the tanners as the latter increased in wealth and importance. In 1323–4 we find the cordwainers petitioning that they might be allowed to continue to use the craft of tanning in their own house, a right with which their rivals seemed inclined to interfere.[4] This claim they successfully substantiated, orders being given that they were to be permitted to tan skins as heretofore in their own house.[5]

John Evans, who followed the Corvisor's trade in Shoplatch in Shrewsbury in 1525, represented his native town in Parliament in 1547.[6] The Corvisors' Row marked the quarter specially occupied in mediaeval times by members of the craft.[7] Merchants, not being free of the shoemakers, were not permitted to buy shoes to sell again.[8] In 1674 the Company of Corvisors had liberty to inclose the Maze in Kingsland (the Shoemakers' Arbour) till further orders to the contrary, so that public stiles be made for all persons to go in there at will.[9]

The corvisors of Oswestry were an important and influential body before 1587, when they numbered sixty-six masters and freemen.[10] Three apprentices only were allowed to be taken by any master; at a later date this was reduced to two. Only one shop was to be kept by a freeman. In 1652 Daniel Williams was fined 29*s.* 6*d.* for keeping two shops.[11]

On 29 August, 1689, nineteen members of the Tanners' Company of Oswestry agreed to bring an action at law against William Rogers, foreigner to the said company, who bought skins and hides within the borough, thereby infringing the company's rights under their letters patent granted by Charles II.[12]

Bridgnorth reported, through its bailiffs, in 1634 that they had tried the leather for boots and shoes at that town, and had inflicted penalties amounting to 4*s.* 6*d.*, which they had bestowed upon the poor.[13]

An extensive tan-yard at Newport was owned by a Mr. Alcock in 1791, when it was destroyed by fire on 8 October, 59 tons of bark being consumed by the flames.[14]

Tanning is carried on at the present day in Newport by the firm of R. P. Pearce & Co., who produce 30 tons of leather annually, in the preparation of which 2,000 hides are used, the leather being specially adapted for boots and shoes. The number of hands employed varies from six to ten. Bridgnorth Tannery is carried on by Mr. Munday in Mill Street, where a very soft leather is produced by the process of dividing the hides, thus giving two additional surfaces. There are two tanneries at Ludlow, that in Corve Street, carried on by John Bishop, and one in Lower Galdeford by W. Tipton. The Shrewsbury Tannery is owned by James Cock & Son in Barker Street, there being also tanneries at Oswestry and Whitchurch.

[1] Ex inform Mr. Beacall.
[2] *Shrops. Arch. Soc. Trans.* vi, 284.
[3] 'Libertates confirmatae cordewanariis villae Salop,' 17 Edw. II.
[4] *Shrops. Arch. Soc. Trans.* vi, 284.
[5] Ibid. 289.
[6] Ibid. v (Ser. 3), 119.
[7] Ibid. 272.
[8] Add. MSS. 21023, fol. 553.
[9] *Shrops. Arch. Soc. Trans.* xi, 190.
[10] *Bye-Laws*, 19 March, 1902.
[11] Ibid.
[12] *Shrops. Arch. Soc. Trans.* iv, 52.
[13] *Cal. S.P. Dom.* 1634–5, p. 444.
[14] *Shrops. Arch. Soc. Trans.* x, 118.

# POTTERY

The same beds of clay of the Severn Valley which in modern times have furnished the material for the pottery industry of the county, supplied the ancient city of Uriconium with jugs, mortaria, bowls, and colanders.[1] The products of the Roman-Salopian kilns, says Mr. Jewitt, were of two sorts. The first, white in tone and rather coarse in texture, was made of Broseley clay, the specimens found on Roman sites comprising jugs or bellarmine-shaped vessels, mortaria, and bowls, these being usually painted red and yellow in stripes. The red variety of the same ware, which was finer in texture than the white, generally took the shape of jugs and bowl-shaped colanders.[2]

Reliable authority is wanting for fixing the date at which the art of potting was first practised in Shropshire, but it appears clear that the articles first produced were of the simplest kind, being almost uniformly domestic and such as are in daily use, as milk-pans, dishes, jugs, and mugs. The mugs were substitutes for the drinking horns which later improvements in the plastic and ceramic arts have driven out of use. An ancient specimen is in existence made at the Pitchyard; also a drawing of another, made at Haybrook, well *potted*, and of elegant shape. The latter is the better manipulated, and probably it was from this manufacture that the latter place was called the Mug-house or Mug'us.[3] Evidences of old mugs, together with milk-pans and washing-pans, having been made at an early period are numerous, and the old 'seggars' in which they were burnt often form walls of the oldest cottages in Benthall and Broseley Wood. A considerable number of old jars, mugs, and other articles have from time to time been found in places and under circumstances sufficient to indicate great antiquity.

One large earthen jar, with 'George Weld,' in light clay, was found in an old drain at Willey, and is now in the possession of Lord Forester.

No satisfactory account is obtainable of the pottery at the Pitchyard, Benthall, but with regard to the one at Haybrook we learn from Mr. T. H. Thursfield, of the Grange, Much Wenlock, that he has in his possession the original lease whereby his ancestor, John Thursfield, was tenant of Haybrook Pottery, which he started under George Weld, who died in 1748.

As already intimated, the articles manufactured were of the simplest character and of brown or yellow ware, the only attempts at decoration being a few broad bands of white *slip*, draggled on, as it were, through a quill inserted, by means of clay, into a sort of Mocha bottle. The old baking dishes especially were done in this way. Mugs or *tots*, without handles, after the fashion of our old English drinking horns, used when men drank in company, the too free use of which gave rise to the word 'totty' in old writings, were also made here.

These articles are still manufactured at Benthall; but the present proprietor, Mr. W. Allen, on coming to the works, made a laudable attempt to raise the character of the productions, availing himself of the educated talent of the South Kensington School of Art, and also of the neighbouring School of Art at Coalbrookdale, which he induced some of his older workmen to attend in the hope of adding to technical skill accurate knowledge of form and design.

For some years the works were noted for the production of 'Salopian Art Pottery,' which included plain jars, bottles, tazzas, vases, and plaques of various sizes. Greek, Egyptian, Trojan, and Etruscan vases were copied very successfully. One mode of decoration adopted with good effect was that of dipping the article into a white or coloured *slip* before firing it, and when hardened a little, cutting it so as to form a pattern through which the red ground underneath showed. Another form of decoration consisted in incising the body, whether of white or red clay, then dipping it into a coloured glaze and firing it; the dip, being fused, ran into the incised parts, where, being stronger and darker, it formed distinct outlines of the figures or patterns.

The Roman Salopian jars to be seen in the Archaeological and Natural History Museum at Shrewsbury were also reproduced with great success, their elegant and flowing outlines requiring no adornment.

With the exception of a few Greek vases and some ware after the Hispano kind, the chief productions of the works, after the common ware, are of a utilitarian character, consisting of electrical engineering pottery and black enamel bases for lamps.

Another old clay work at Horsehay on the opposite bank of the Severn, after undergoing a transformation from a pottery to a brickyard under the Coalbrookdale Company, has now become an important establishment for the manufacture of sanitary ware, under Messrs. Day's Syndicate, Ltd. The increasing demand for improvement in sanitary arrangements in all towns in the United Kingdom has created industries of this kind beyond any former experience.

Lying near the outcrop of the Coal Measures,

[1] Jewitt, *Ceramic Art*, 33–5.
[2] Ibid. 177.
[3] Mughus, a pottery. Hartshorne, *Salopia Antiqua*, 51.

the excellent clays of the district, which are of considerable variety, are easily accessible to the company, found as they are within easy distance from the surface. The fireclay of the district is used by them for the manufacture of ordinary and sanitary drain pipes, channel pipes, siphons, sinks; pig, cattle, poultry, and horse troughs; corn mangers, yard traps, and gulleys; these being glazed with a vitrified salt glaze. From these fireclays, which are of a very superior quality, the company are able to produce a class of article of a decorative kind in chimney-pots and wind guards, in addition to fire bricks, quarries, boiler-seating blocks, flue and furnace linings, &c.

The syndicate employ about eighty hands, and have a present turnover of about £6,000 per year, but as a result of large and important extensions the turnover is expected to be very largely increased in the immediate future.

## PORCELAIN

The first porcelain works in Shropshire had their origin in a very secluded spot on the high ground overlooking the Severn, and about a mile distant from the right bank of that river and from the town of Broseley. The proximity of coal, which could be obtained within 20 ft. of the surface, and the abundance of an excellent fireclay, were no doubt the inducements which led to the choice of the site. A small pottery had been established at Caughley about the middle of the eighteenth century by Mr. Brown of Caughley Hall, after whose death it was managed by his relative Mr. Gallimore, who obtained a lease of the place for a period of sixty-two years.[1] He was succeeded in 1772 by his son-in-law, Mr. Thomas Turner of Worcester, a man of great taste, a skilful designer and draughtsman, under whose management the character of the productions, which had already attained a considerable degree of excellence, showed a marked improvement, especially with regard to the body, which became finer and more transparent. Mr. Turner enlarged the works, which were built in the form of a quadrangle, with an entrance gateway having an inserted stone, bearing the date of the foundation, 1772. The main building, which was three stories, and the remainder two stories high, provided accommodation for the large number of workmen employed, and the kilns for burning the ware were large and commodious. The works, which were several years in progress, were completed in 1775, and were alluded to in a county newspaper for 1 November of that year as follows:—

> The porcelain manufactory erected near Bridgnorth, in this county, is now quite completed, and the proprietors have received and supplied orders to a very large amount. Lately we saw some of their productions which in colour and fineness are truly elegant and beautiful, and have the bright and lively white of the so much extolled Oriental.

A few years later Mr. Turner, with a view to extending his knowledge of the manufacture and decoration of porcelain, went over to France, where he visited the Paris and other manufactories, and brought back with him several skilled workmen. One workman who accompanied Mr. Turner on his return from France was a modeller named Stephan, who was a very clever designer, and whose sons, grandsons, and great-grandsons have followed, and still follow, the same profession. Mr. Turner threw all his energies into the improvement of the productions of the works, and besides imparting more of the character of porcelain to the body, which in the first instance was but little removed from earthenware, introduced new shapes and fresh modes of decoration. The famous willow pattern was first introduced into England by Mr. Turner, as well as the blue dragon pattern, which is still known by the trade as the 'Broseley blue dragon.'

Speaking of the productions of Caughley Mr. Chaffers says:—

> The excellence of Turner's porcelain, and the invention of the beautiful dark blue of the Caughley china attributed to him, gained him great patronage. In 1780 he produced the celebrated 'willow pattern,' which even in the present day is in great demand, and the blue dragon, another favourite pattern, and completed *the first blue printed table* service made in England for Thomas Whitmore, Esq., of Apley Park, near Bridgnorth; the pattern was called *Nankin*, and was something similar to the Broseley tea service produced in 1782, all in porcelain.[2]

A speciality of Caughley was a design in blue and gold, either painted or printed on a white ground. An excellent specimen of this is a mug bearing the name of 'Francis Benbow, 1776,' decorated with blue and gold flowers, surmounted by an anchor, in allusion to the fact that the man for whom it was made had been a barge owner. This mug remained in the possession of the Benbow family till the close of the nineteenth century, when it was sold to Mr. Bruff, the managing partner of the Coalport works, and now finds a place in the showroom. Another curious example is a puzzle-jug in the possession of the Thursfield family. It is 8 in.

[1] Jewitt, *Ceramic Art of Gt. Brit.* 157.

[2] Chaffers, *Marks on Pottery*, 701.

long, and is decorated with blue sprigs. On the front, surrounded by an oval border, is the name of 'John Geary, Clerk of the old Church, Broseley, 1789.' Mr. Hubert Stanier Smith, of Leamington, formerly of Bridgnorth, the grandson and only direct lineal descendant of Mr. Turner, his mother having been Mr. Turner's only daughter, has some good specimens of the Caughley ware; one, a white mug with blue flowers, bears the name of 'William Haslewood 1791.'

For some time Caughley supplied plain ware to the Worcester works of Mr. Robert Chamberlain, and also at their first commencement to those of Thomas Grainger of the same city, the works being conveniently situated for shipping it by barges on the Severn to its destination. According to Mr. Llewellyn Jewitt it is known that the ware was also sent up from Worcester by barge to be printed, and afterwards returned by the same conveyance. The art of transfer printing upon china was practised there very early in the history of the works, and so jealously was the secret of the process guarded that the engravers and printers were locked up and kept apart from the other workmen.

It is known that as many as four printing presses were at work at Caughley.[3]

It is pretty clear also that Robert Hancock, of whose works some fine specimens are still extant bearing the monograms of Worcester and of Caughley, engraved for both works. Another engraver was Mr. Dyas, a descendant of Edward Dyas, who came over to England with the Prince of Orange, and was employed at the Chelsea works. The former was engaged at Caughley about the year 1768, and continued there until his death at the advanced age of eighty-two.

Mr. Thomas Minton, father of Mr. Herbert Minton of Stoke, was also employed as an engraver in his early days at Caughley; Mr. Digby Wyatt, in a paper read before the Society of Arts and published in the Society's Journal of 28 May, 1858, says:—

> Mr. Thomas Minton was a native of Shropshire, and was brought up at the Caughley works, near Broseley, as an engraver. He then went to town and worked for Spode at his London house of business as an engraver.

In 1788 he went to Stoke, bought land, and built the house and works which have since become so famous. Up to 1798, however, he only made earthenware, which was printed in blue, similar to that of Caughley.

It must not be thought that it was only for printed ware that Caughley attained celebrity, though the style of engraving was remarkably good, and much superior to others of the same period. Decorations of a higher class were employed by talented artists, among whom were some who afterwards gained more than local fame, as Muss and Silk, who excelled in landscape and figures, and who, on removing to London, reached the head of the profession as painters on enamels, and were entrusted with the execution of the portraits of many eminent and royal personages. As flower painters John Parker, Thomas Fennell, and Henry Boden are worthy of mention. Martin Randall gained distinction as a painter of birds. Among the gilders were Nevitt, Rutland, Marsh, Edward and William Randall, and Thomas Knowles.

The fact that both Caughley and Worcester employed the crescent as a trade mark is sometimes puzzling to collectors, especially as it is frequently found upon specimens bearing printed designs of identical patterns, which is explained by the fact already referred to, that in many instances Worcester ware was sent to Caughley to be printed. The crescent as employed at Caughley was originally a half-moon, which passing through several stages of transition became a distinct C., denoting Caughley. The letter S., as denoting 'Salopian,' was also employed as a distinctive mark, whilst on many specimens both the C. and S. appear together, and on others the initial S. with crossed daggers. The word 'Salopian' impressed in the body of the ware was also used as a trade mark.

Mr. John Rose, who had been for some years in the service of Mr. Turner, in consequence of some disagreement, upon which it is not necessary to enter here, left him and joined Mr. Blakeway in small works at Jackfield, about two miles distant from Caughley, and on the same bank of the Severn, where there was already a wheel for grinding colours and materials turned by the river. These works were of much older date than that of Caughley and, according to the parish registers of Stoke-upon-Trent, supplied a race of potters to that great centre of early pot-making in the year 1560. Excavations made, too, some years ago, brought to light, on a spot near which the works of Craven and Dunnill now stand, an oven or kiln containing unbaked ware, which appeared to have been buried by a land-slip; and in an old pit, which it was said had not been opened for nearly two centuries, a brown mug was found which had upon it the date 1634. If Jackfield supplied early potters for Stoke, Stoke sent pot-masters to Jackfield, one of whom was Mr. John Thursfield, an ancestor

[3] 'Transfer printing was used as early as 1757 on Worcester porcelain, and I have little doubt that quite as early, if not a few years before that period, it was practised at Caughley' (Jewitt, *Ceramic Art of Gt. Brit.* 162). In the early years of the manufactory, the two works, Caughley and Worcester, seem to have been so closely connected that there are good grounds for believing that a great proportion of goods bearing the Worcester mark were printed at Caughley.

of Mr. T. H. Thursfield, who took these works and carried them on in 1713. He was succeeded by his son Maurice, who made a very superior black ware of elegant shape, some of which was so highly glazed as to have the appearance of glass, which gained for it the local name of 'black decanters.'[4] Some of the specimens were decorated in gold and colours and with paintings in oils of both landscapes and portraits, as well as with raised ornaments. Tiles of the Dutch pattern as well as white stone ware, similar to that made in Staffordshire, were also produced at these works.

In 1772, or soon after, a Mr. Simpson took the works and further improved the manufacture, for in addition to the black ware he made yellow ware and various articles of superior quality, which prior to the war with America found a ready sale there. The old mill referred to, where the materials were ground, was taken down a quarter of a century ago.

Mr. Blakeway afterwards carried on the works, and was joined, as we have seen, by Mr. John Rose. The latter having carried them on for a few years in conjunction with Mr. Blakeway, and for a short time by himself, during which he greatly improved the quality of the productions, established the present Coalport works in some buildings which had previously been a small pottery belonging, it is said, to a Mr. Young of Shrewsbury, on the side of the canal then recently opened, and opposite those of Reynolds, Horton, Thomas Rose, and Robert Anstice. On Mr. Turner's retirement from the Caughley works in 1799, they were purchased by Mr. John Rose and the company he had formed, and he shortly afterwards removed both plant and materials from Caughley and Jackfield to the more advantageous position they now occupy on the banks of the canal and the Severn. Even the buildings at Caughley were pulled down and the material used for enlarging the works and building a row of cottages for the workpeople opposite the warehouse at Coalport. The plough passes over where the Caughley works once stood, and a few pitchers turned up now and then are the only indications obtained of the site of these interesting works.

The Coalport works were a continuation of those of Caughley and Jackfield.

At that time Coalport was what its name implies, a port for barges on the Severn to load and unload at its wharf, where as many as seventy barges might have been counted at once at their moorings. It was the great outlet for the mining and iron-making produce of the then busy works at Ketley, Hadley, Dawley, and Stirchley, which was brought by canal along the high ground and let down the inclined plane to the short canal which ran parallel with the Severn, then the great inland water-way to and from Bristol, Gloucester, and Worcester beyond Coalport to Shrewsbury, and right up to Pool Quay near Welshpool. Others beside Mr. Rose had perceived the natural advantages of the site, and a company composed of the lord of the manor, William Reynolds, Robert Anstice, Thomas Rose, and Robert Horton, had erected substantial buildings close to the Severn for the manufacture of earthenware. These works, however, were soon absorbed by John Rose and the company he formed, as were also the small pot-works which had been begun by Mr. Young of Shrewsbury, a staff of excellent workmen being drafted from Caughley and Jackfield.

In 1804 the works, which had been much enlarged, were carried on by a company consisting of Cuthbert Johnson, William Clarke, John Wootton, and John Rose. In 1811 it comprised John Rose, William Clarke, and Charles Maddison, who bought the famous Swansea works in 1820 and entered into an agreement with Messrs. Billingsley & Walker to make for them a superior kind of porcelain which they had been manufacturing first at Nantgarw, in Glamorganshire, and afterwards at the Cambrian Pottery, Swansea. This was a pure soft paste porcelain, second only to the famous *pâte tendre* of Sèvres at the best period of its manufacture. This china was first made in 1813 by Billingsley, who went from Derby to Worcester, and thence to South Wales, where with his son-in-law Walker, also of Derby, he established the small but famous works of Nantgarw. Billingsley was a clever flower-painter, and understood the manufacture of porcelain in all its branches. He produced a fret body by mixing the materials, firing them in order to blend them together, then reducing the vitrified substance into clay—a process which was carried on at old Sèvres during the reign of Louis XV, and thereby producing an article fine in texture, beautifully transparent, and of a delicate waxy hue, very superior to the dingy blue tinge given to much of the best china of that day. Connoisseurs were at once attracted by it, and Mr. Mortlock, a well-known London dealer, went down to Nantgarw and entered into an agreement to purchase all that Billingsley and his son-in-law could make. Mr. John Rose, finding that he had lost a customer, and that orders he was wont to receive were going to South Wales, went over, bought the works, moulds and everything, and entered into an agreement with Walker and Billingsley for a period of seven years to make the same quality of china at Coalport, which they continued to do until the death of Billingsley in 1828 and the removal of Walker to America, where he established a pottery. The process was an expensive one, from the difficulty of working the clay which wanted plasticity, and also from the loss in the burning,

[4] *Bye-Gones*, 25 May, 1898, p. 374.

as being a soft body it was apt to melt or warp and to go out of shape if it got a little too much fire in the biscuit kiln. About that time, too, Mr. Ryan discovered a very pure felspar in the Middleton, one of the Briedden Hills, the true *Kaolin*, to which the Chinese were indebted for the quality of their egg-shell and other first-class china. The fret body was therefore abandoned, the *pâte tendre* for a *pâte dure*, and by adding pure felspar to the Cornish stone and clay which contains a large percentage, a more transparent body was obtained at a less cost than by using a *fret body*. It was at this time that the Society of Arts offered a gold medal to anyone who should find a substitute for lead in the glaze, which had an injurious effect upon the dippers and produced paralysis. Other firms, as the Copelands and Davenports, entered into the competition, but the prize was gained by Mr. Rose, who applied felspar to the glaze, and from that time for some years a badge was either attached to the porcelain made at Coalport or engraved upon it, bearing the words :—'Coalport felspar porcelain, J. Rose & Co., the gold medal awarded May 30, 1820. Patronized by the Society of Arts.'

The felspar porcelain, however, never equalled, for purity and transparency, the original Nantgarw fret-body ware, a white plate of which would now fetch a couple of guineas. Unfortunately, too, Mr. Rose eventually returned to the use of lead in the glaze, and its ill effects produced much suffering to the workmen employed.

In 1821 Mr. Walker invented a maroon colour dip for grounds, which was used with much success. A good deal was done at this time in imitation of the Sèvres style of decoration, and thousands of pounds were spent in endeavouring to produce the famous turquoise of the French ; but a pale imitation called celeste only was obtained, though some years afterwards a much better colour was produced.

The works were now in a state of much prosperity ; warehouses were opened in London, Manchester, Sheffield, and Shrewsbury, and a large trade was being done with dealers all over the kingdom. There was plenty of employment, liberal wages were paid, and a good understanding prevailed between masters and men. But to the latter there was one notable exception, 'the great strike,' as it was called, which occurred in November, 1833 ; an event so memorable in the history of the works that in speaking of occurrences connected with them, it was usual, in cases of doubt, to ask if they occurred previous or subsequent to the strike.[5]

In 1839 the late William Pugh became one of the firm, it being then John Rose, Charles Maddison, and William Pugh. In 1841 it was Charles Maddison, William Pugh, Thomas Rose, and William Frederick Rose. Mr. John Rose died that year, but the firm still continued to be called 'John Rose & Co.,' a term which it has borne from its commencement to the present day. In 1843 William Pugh and William Frederick Rose, nephew of John Rose, were the sole proprietors. In 1850 the famous rose colour which had been a speciality of the Sèvres works, but the art of which had been lost, and which took its name of Rose du Barry from the beautiful mistress of Louis XV, was discovered at Coalport, and its reproduction created a great demand for rich dessert services and ornaments of the colour. It was used as a ground for every conceivable variety of decoration, and when accompanied by dull and burnished gold, and further enriched with the exquisite specimens of painting for which the works were famous, the effect was handsome in the extreme. Very costly services of it were produced for the Messrs. Daniell, Mortlock, Phillips, Goode, and other London dealers. One magnificent dessert service, which was exhibited at the International Exhibition of 1851, attracted considerable attention and was pronounced by connoisseurs to equal the original Sèvres colour in evenness and purity. It was purchased by Lord Ashburton.

The following are the remarks of the jurors on that occasion :—

> Rose, J. & Co., Coalbrook Dale, Shropshire, have exhibited porcelain services and other articles, which have attracted the special attention of the jury. A dessert service of a rose ground is in particular remarkable, not only as being the nearest approach we have seen to the famous colour which it is designed to imitate, but for the excellence of the flower painting, gilding, and other decorations, and the hardness and transparency of the glaze. The same observation applies to other porcelain articles exhibited by this firm. The jury have awarded to Messrs. Rose & Co. a Prize Medal.

Other services and ornaments, after special models and designs, were subsequently produced for her majesty the queen, the emperor of the French, the duke of Northumberland, the marquis of Lansdowne, and other noblemen.

At the Paris Exhibition of 1855 the Coalport company exhibited some exquisite specimens of their productions, and services were purchased by the emperor of the French, and by many connoisseurs of Paris, and a prize medal was awarded for their exhibits.

Amongst other colours for which the firm was famous was Sardinian green, a colour of extreme depth and richness ; a blue with a slightly purplish tinge; and a pink, or light Rose du Barry, all of which formed rich grounds for the decorative art of gilders and artists.

The company was now in possession of a rich

[5] His neighbours so approved of the firmness displayed by Mr. Rose in resisting the demands of his workpeople, that they presented him with a handsome piece of plate bearing an inscription to that effect.

variety of first-class vases produced by their own modellers, and also of others made from moulds which the managing director of the Sèvres works had generously sent over as a present to Mr. Rose. The latter especially were admirably suited for the display of the painter's art, and the highest talent procurable was engaged upon them, as Mr. R. F. Abraham, a successful follower of the school of Etty, who had studied both at Antwerp and Paris, and Mr. Charles Palmere, both of whom were painters of the human figure, and who reproduced noted beauties of the court of Louis XV ; Mr. William Cooke, Mr. J. Aston, and Mr. Arthur Bowdler, skilful flower-painters ; Mr. John Randall, who painted birds ; Mr. Harper, landscapes ; Mr. J. Hartshorne, as a painter of cattle ; while Mr. Francis Birbeck was happy in the production of gems and in the art of gilding.

The exhibits of the company at the Exhibition of 1862 fully maintained its reputation for high art both in form and in delicacy of colour, as well as in painting and decoration.

Although not exhibitors as a company at the Paris Exhibition of 1878, some fine specimens of Coalport china were shown by Messrs. Daniell among their exhibits, decorated with rich Cashmere patterns, together with some cobalt plates with beautifully enamelled and richly gilt borders. About that time the firm was engaged in executing a service of similar pattern for 150 persons for the Maharajah of Jeypore, who was then on a visit to England at the invitation of the Prince of Wales. A toilet service subsequently ordered by Prince Dhuleep Singh, and painted with humming-birds on a gold ground by Mr. Randall, was quite oriental in its magnificence.

Meanwhile Mr. W. F. Rose had retired from the partnership, and from 1862 to the time of his death in 1875 Mr. William Pugh was the sole proprietor. Mr. Charles Pugh, brother of the deceased, and Mr. Edmund Ratcliffe, brother-in-law, were left executors, and for the adjustment of claims by them and others the estate was thrown into Chancery and a manager appointed, the works being eventually purchased from the trustees by Mr. Peter Bruff of Ipswich and London. At the time of writing they are carried on by his son, Mr. Charles Clarke Bruff, and his grandson, Mr. Arthur Bruff Garrett, the original title of the firm, John Rose & Co., being retained. Under their management and that of Mr. Thos. J. Bott considerable improvements have been effected both in the approach to the works, which has been planted with trees, and in the exterior and interior of the buildings themselves, which are better lighted and better ventilated. Under the new Factory Act, too, quite a revolution has taken place in the means adopted to protect the operatives from the injurious effects of the deleterious matter necessarily employed in the use of the colours, and from the dust arising from the grinding and dressing of the biscuit ware. This firm claims the credit of using a leadless glaze, thus avoiding the evils formerly inflicted on the dippers by the use of lead.

The attention of the company has been and still is directed specially to the production of new shapes and forms of articles both for use and ornament, for which good modellers are employed. Mr. Bertram Mackennal, who has gained much fame in Australia by his Statue of Liberty, which adorns the entrance to the Government buildings in Melbourne, and in Paris by his statue of Madame Sarah Bernhardt, was employed as a modeller at Coalport for a short time some twelve or fifteen years ago. On being appointed art director Mr. Bott chiefly devoted his energies to bringing methods and patterns up to date. Among other novelties produced at the beginning of the last decade of the past century was what is known as the 'Turquoise Jewel Ware,' which had, and still continues to have, a great sale. The decoration consists of a number of little jewels geometrically arranged on a dead gold ground, varying in size according to the form of the article decorated, the effect when finished being extremely rich.

To the Chicago Exhibition in 1893 a fairly representative exhibit was sent by Coalport, among the specimens being a pair of vases, some two feet in height, known as the Elizabeth and Victoria vases, the design of which was intended to convey an idea of the two great queens of England and of representative Englishmen who flourished during their respective reigns. Twelve dessert-plates specially produced for this Exhibition were pierced at the edges and ground in delicate tones of primrose and ivory, the centre of each bearing a beautifully painted head of some well-known court beauty of the eighteenth century, copied from Sir Joshua Reynolds by Mr. J. Rushton, and inclosed in richly raised gold panels. These plates realized the largest sum given for a similar number during the Exhibition.

Many vases also were so treated as to appear to be made of some semi-precious stone, as agate, cornelian, amber, and malachite, which were so nearly reproduced that inquiries were made whether strips or panels of the stones themselves had not been affixed to the ware. The result of the exhibits at Chicago was highly satisfactory, the highest award being given by the judges.

Another fine collection of the productions of the Coalport works was sent to the exhibition at the Imperial Institute in London the following year, resembling in most cases the more novel features of those produced for Chicago.

Randall's China Works at Madeley were only on a small scale, but the excellent ware

produced there makes them well worthy of attention.

Thomas Martin Randall was a Caughley man who served his apprenticeship under John Rose. He then went to Derby, and afterwards to London, where he entered into partnership with Mr. Robins. They erected suitable buildings at Islington, and for some years were employed in the decoration of Nantgarw and white Sèvres.

About the year 1826 the partnership was dissolved, and Randall came to Madeley, where he occupied a house in Park Lane and established china works at the lower end of the town. Here he erected enamelling, biscuit, and other kilns, and made and finished his own ware. Not having had experience in china-making, great mistakes, resulting in heavy losses, were at first made. A biscuit kiln has been known to be fired till tea-pots, cups, and saucers were melted into a mass before a trial was drawn, crowbars being necessary to remove them.

Mr. Randall, however, by dint of repeated and persevering experiments, at last succeeded in producing a fret body with a rich glaze which bore so close a resemblance to old Sèvres china that connoisseurs and famous judges failed to distinguish between the two.

About this time the demand was great with connoisseurs among the aristocracy for old Sèvres china, and the London dealers were ready to pay well for good imitations of that celebrated ware, which they then sold as the real article. Martin Randall, however, refused, from conscientious motives, to put the Sèvres mark, the double $\mathcal{L}$[6] crossed at the bottom, on his china, which was done with less hesitation by others with much more feeble imitations.

Mr. Randall, however, did a great trade in redecorating old Sèvres in the most elaborate and costly manner. The less scrupulous London agents passed off such work as that of Sèvres artists throughout. Indeed, they have been known to have boxes of china from Madeley sent on to Dover, there to be redirected as coming from France, inviting connoisseurs to come and witness them being unpacked on their arrival, as they represented, from Paris.

The writer remembers seeing an ornament at the marquis of Anglesey's at Beaudesert which he was assured was old Sèvres, and had been purchased at great price on the Continent, but which he recognized as one which he himself had painted at Madeley.

An amusing incident of a somewhat similar nature occurred at Coalport. Mr. F. W. Rose, who had been conversant from a child with china, on one occasion bought a vase which he believed to be old Sèvres, but which had been made years before at his own works at Coalport and painted by the present writer at Martin Randall's Madeley works. His surprise may be imagined on finding that he had been duped by a dealer with a piece of his own ware.

Martin Randall removed from Madeley to Shelton in the Potteries for the greater convenience of carrying on his works, and there he was offered a partnership by the late Herbert Minton. Age, however, soon afterwards led him to retire from business to a cottage at Barlaston, where he died, and was buried in a sunny spot, in a field belonging to a friend, of his own choosing, within sound of the murmuring waters of the Trent.

The chief beauty of Mr. Randall's porcelain, like that of other fret bodies, or *pâte tendre* china, was that it admitted of a complete amalgamation of the painting with the glaze, and also of a richness and depth of colour, as in the case of turquoise, not to be produced on ordinary china.

Very fine specimens of his work are in the possession of Mrs. Darby, of Adcote, and of W. G. Norris, J.P., of Dale House, Coalbrookdale.

Mr. Randall's artists were: Mr. Philip Ballard, brother of Thomas Ballard, R.A., already mentioned; Robert Gray and his son Robert, painters of flowers; J. Randall, painter of birds; Enos Raby, gilder and ground layer; Francis Brewer, modeller; William Roberts and Thomas Wheeler, potters; David Morris, fireman; and some others.

## BROSELEY TOBACCO-PIPES

Broseley has for centuries been known through this county for its tobacco-pipes. We have seen some bearing the dates 1600, 1675, 1681, and others down to 1696; some have the maker's name, as John Hart and John Legg,[1] the latter being the name of one long known as an excellent pipe-maker.

From the time when King James gave his famous counterblast to tobacco, Broseley would seem, from the above dates, by its 'yards of clay' to have been tempting the public to burn the well-known weed. 'Will you take a Broseley?'[2] is a phrase familiar to smokers the country through; but why this spot should have been selected as the seat of this particular branch of the fictile art has often been a puzzle

[6] Louis, Louis.

[1] Richard Legg, according to Mr. Thursfield, was the father of Broseley pipe-makers. *The Reliquary*, iii, 79.

[2] Broseley, a pipe. Hartshorne, *Salopia Antiqua*, 338.

to those who have looked into the history of pipe-making, seeing that the clay of which the pipes are made, for as long as local history or tradition enables us to travel back, was not found there. It may be, however, that native clays were used in the manufacture of the earliest specimens, as those found at Shirlett and Much Wenlock would seem to indicate. One advantage the Broseley makers would find is the facility with which they could obtain coal and fire-clay; another would be that which the river afforded of obtaining clay from Dorset and Devon, and of transmitting the manufactured article to distant parts. It is quite certain that early specimens of these pipes are continually cropping up in unlooked-for places, in digging, ploughing, and excavating here and in the neighbouring parishes.[3] With regard to their antiquity, the natural conclusion is that pipes came into use upon the introduction of tobacco, which has been ascribed to Sir Walter Raleigh, Sir John Hawkins, and others; but from the pipes themselves, and the situations in which they have been found, it would almost appear that they may have been used prior to that epoch-making event, either for native herbs or plants, medicinally or otherwise. Neither the size nor the rudeness or finish of the workmanship of those found appears to afford a sufficient criterion of the period of their manufacture. Some found under an old oak floor of Buildwas Abbey were small and well finished, whilst later ones are found to be still more diminutive, and it is only when specimens with the dates affixed occur that safe criteria appear by which to fix the period of their manufacture.

The late Mr. Thursfield's collection, one of the largest and best made by any individual, and numbering upwards of 400 specimens, contains some very interesting examples, and we cannot do better than quote from a paper entitled 'Old Broseley' which he prepared and published in *The Reliquary* on this subject in 1862. He says :—

> I have in my own possession about 400 differently-shaped pipe-bowls, which have been mostly picked up in the immediate neighbourhood of Broseley. Of these more than 200 have marks upon the spur, and no two impressions are alike. Some of these marks exhibit the maker's name in full; some abbreviated, others with initials only, and one has a gauntlet[4] on the bowl, with 'S.D.' (probably the initials of Samuel Deacon, who was alive in 1729). In the whole of my collection three only bear dates, viz., Richard Legg, 1687; John Legg, 1687; and John Legg, 1696. These are of large size, beautiful in shape and finish, and have never been surpassed in materials or workmanship.
>
> No others, of the many names found on the spurs of the pipes, live amongst us now as pipe-makers, and it is a curious fact, that in almost every instance where a pipe-maker's name for the first time appears in the register, it is on the occasion of baptising a child; as though they were strangers come to live in the neighbourhood. I have, therefore, in the accompanying plates of pipes and marks on the spurs, placed under the name of each maker found in the register the date of his first mention there; but there are many names very common on the pipes which are not to be found in any of the registers in the immediate neighbourhood, and yet, from being found here, it would seem to be their place of residence.
>
> Pipemaking, in the early days of its introduction, was a very different matter from what it is now. Then, the greater part of the manipulation was performed by the master, and twenty or twenty-four gross was the largest quantity ever burned in one kiln. This required from 15 cwt. to a ton of coal. Each pipe rested on its bowl, and the stem was supported by rings of pipe-clay placed one upon the other as the kiln became filled; the result was that at least twenty per cent. were warped or broken in the kiln. At the present time the preliminary preparations of the clay are performed by men, but the most delicate part is almost entirely entrusted to the hands of women. The pipes are placed in saggers to be burned, after the Dutch mode; and from 350 to 400 gross in one kiln is not an uncommon quantity. The breakages of the present day amount to not more than one per cent.
>
> About eighty years ago the pipe-makers began to stamp their names and residences[5] on the stems of the pipes instead of the spurs, the stems being in many instances 18 in. or more in length. They likewise made a small corded mark, at such a length from the bowl that when held between the fingers at that spot, the pipe was balanced.
>
> A pipe-maker named Noah Roden brought the long pipes to great perfection, and supplied most of the London clubs and coffee houses of that day.[6] He died about 1829, and his business was carried on by William Southorn, who made great strides in improving the manufacture, and whose son and grandsons are now carrying on the famed business of makers of the 'Real Broseleys.'
>
> The pipes I have in my possession, which were picked up in the rubbish which was being sifted from

[3] The Broseley pipes dug up in old gardens or when ploughing were, says Hartshorne, locally known as 'Fairishes pipes.' Hartshorne, *Salopia Antiqua*, 417.

[4] Gauntlett pipes were made by a maker of that name whose trade mark was a gauntlet on the heels of the pipes.

[5] In the early days of the industry, each family of makers had their own pipe-shop, where they worked the clay and moulded their pipes. Adjoining the shops were several small kilns for burning the pipes, traces of these being still found at Broseley and at Benthall. In this, as in other industries, however, the home-worker was gradually superseded by the factory. *The Reliquary*, iii, 81.

[6] It is said that George Forester, esq. (the famous Willey Squire), purchased a box of Roden's pipes in London, and on their arrival at Willey sent for Roden to show them to him as examples for him to imitate, much to the astonishment of the maker, who soon set the old squire right. *The Reliquary*, iii, 82.

the base of Wenlock Abbey in 1817, are very small, and I fancy of very early date. Those Mr. Bernard Smith mentions as coming from Buildwas Abbey were found under an old oak floor, laid down, I should say, very soon after the destruction of the monastery; they are very small and of good workmanship. One of them, smaller than the rest, might be thought, but for the initials, to be Dutch, but I believe it is of early Broseley manufacture.[7]

Pipes found at Wenlock bear the names of Mich. Brown and Geo. Smith. Specimens have been found upon Marsh Farm in Barrow parish, between Shirlett Common and Wenlock. Shirlett still provides the white clay once used at Broseley.

Notwithstanding the modern innovation of meerschaum and wood pipes of various kinds, we are assured by Mr. Southorn that the old clay pipe holds its own and that there never was a greater demand for it than at the present time. Of the many varieties, the following are the better known :—'Large bowls,' 21 in. long; 'long plain,' 22 in. long; 'long Broseley straws' or 'aldermen,' 27 in. long; 'long straws' or 'churchwardens,' 25 in. long, pronounced by Dr. Richardson at the Bath meeting of the British Association to be the best of pipes; 'London straws,' 'Raleigh straws,' 'cutty,' 'Broseley meerschaums,' &c.

The firm were awarded honourable mention and a medal for their clay smoking pipes at the International Exhibition of 1851, also a certificate of merit, 1871.

Another firm engaged in the manufacture of pipes is that of Messrs. A. Smitheman & Co., of the Crown Pipe Works, who make pipes of all lengths, using pure pipe-clay. They are moulded into shape by means of small presses, and are then fired for twelve to twenty-four hours in a kiln. Next, they are 'tipped' at the ends of the stems to prevent the smoker's lips sticking to them, and after being examined and sorted, are then ready for use. The annual output varies from 25,000 to 30,000 gross, and comprises 'cutties,' 'straws,' 'smoke-room pipes,' and 'churchwardens.'

The following are the names on some of the earlier specimens referred to by Mr. Thursfield :—

| | | | | | |
|---|---|---|---|---|---|
| ANDR<br>BRAD<br>LEY | RICH<br>LEG<br>(1575) | THO<br>HVG<br>HES | RICH<br>HAR<br>PER | JOHN<br>LEGG<br>1696) | JOHN<br>PART<br>RIDGE<br>(1718) |
| MICH<br>BRO<br>WNE | JOHN<br>HARTS<br>HORNE | AR<br>HVG<br>HES | RALP<br>HAR<br>PER | THO<br>MAS<br>LEGG | WILL<br>PAR<br>TRIDGE |
| THO<br>MAS<br>BODEN<br>(1681) | IOS<br>HUG<br>HES | JOHN<br>JONES<br>(1590) | RICH<br>LEGG<br>(1687) | THO<br>OVER<br>LEY | JOHN<br>ROB<br>ERTS |
| WILL<br>DAR<br>BEY | THO<br>HVG<br>HES | WILL<br>HAR<br>PER | RICH<br>ARD<br>LEGG | THOS<br>OVER<br>TON | MOR<br>RIS<br>SHAW<br>(1630)[8] |
| EDE<br>WARD<br>Deacon | HAR<br>HAR<br>PER | RAL<br>HAR<br>PER | JOHN<br>LEGG<br>(1687) | IANE<br>OVER<br>TON | — |
| MOR<br>RIS<br>Deacon | JOHN<br>HARTS<br>HORNE<br>(1620) | JOHN<br>HVG<br>HES | SAM<br>UEL<br>LEGG | OL. I.<br>VER<br>PRICE<br>(1685) | — |

## BRICK AND TILE MANUFACTURE

The Severn Valley has for centuries been famous for its clays.[1] Such has been the demand upon them, that some of the works have used up the clays within their reach, but others have been commenced at more favourable points and upon a larger scale. Most of these have been established in the vicinity of railways for the better transmission of their goods to all parts of England. Broseley and its neighbourhood have always been well known for their clays, both red and white. The red, which have already been commented upon, are spread out for miles on both banks of the Severn, over the denuded edges of the Coal Measures, being in fact the sediment thrown down by the waters that destroyed the latter. The white clays, on the contrary, occur between the Coal Measures themselves, the purest and whitest accompanying a coal called the Ganey coal, from which its name, 'Ganey Coal Clay,' is derived. They crop out on both banks of the Severn, where they have been worked by levels driven into the hillside. A small work of this kind formerly existed between Ironbridge and Bedlam, with a primitive engine of the Adam Hislop type, having a horse-head wood

[7] Thursfield, 'Early Salopian Pipes' (*Shrops. Arch. Soc. Trans.* (Ser. 3), vol. vii, pt. ii, 165).

[8] *The Reliquary*, iii, 79, 82. The dates are those of the earliest occurrence of the names on the parish register.

[1] Shropshire fire-clay, says Prestwich, vies with that of Stourbridge, bricks made from this material being in demand in every part of the kingdom at the date of his writing. 'Pounstones' he also mentions as good for fire-bricks; *Geol. Soc. Trans.* v (1840), 434.

Specimens of Bowls of Tobacco Pipes made at Broseley

beam and an open-top cylinder tended by an old woman. The clay was ground fine by rotatory mill-stones, and much of it was conveyed by barges down the Severn to the Worcester porcelain works, where it was highly prized on account of its great resistance to heat, the remainder being converted into brick almost as white as porcelain. It was worked in the early part of the century by Roger Cock, afterwards by the Madeley Wood Co. Another white-brick manufacture was formerly carried on on the opposite bank of the Severn by Mr. James Davies.

The Burtons' white-brick works in Benthall parish were on a larger scale and of more importance than those previously mentioned. Their excellent clay, which would stand any amount of fire, consequent upon the absence of iron and the presence of a large proportion of silica, by a judicious admixture of other clays was made to assume a variety of choice and delicate hues. The firm added to these works those of the red-brick and tile works of Ladywood, previously carried on by the Harringtons. Their architectural crests and roofing tiles, of which they produced upwards of a hundred varieties, gained for them a medal at the London Exhibition of 1862.

The white-brick works referred to are now carried on by Mr. Adam Jones, who, finding the famous Ganey Coal Clay exhausted, has recently been experimenting with another clay found lower down in the Coal Measures, and beneath what is known as the Crawstone Crust, while the red-brick works are now occupied by Mr. Richard Jones, who is working what is called the Clod Coal Clay, of which there is an abundance.

The Holly Grove Red Brick and Tile Works appear originally to have been in the occupation of the Beard family, who resided for many generations in the handsome 'Old Hall' of brick and timber between the brickworks and the Severn. They appear to have had a succession of leases of these works and of the Old Hall from the Lacons and the Welds, former holders of the estate, a 'New lease' being granted to John Beard in 1792 for twenty-one years at an annual rental of £20. This lease was probably renewed by George Forester, the 'Willey squire,' for we find that in 1813 Elizabeth Beard, probably the widow of John, leased the works for £1 1*s.* per week to Samuel Roden, which lease expired in 1824. The works were afterwards carried on by Mr. Thomas Roden and his sons Thomas and John. Since then they have passed through the hands of Mr. Lawes, the manufacturer of artificial manure, Mr. Morgan of Shrewsbury, who managed them for Mr. Lawes, and Mr. Wilkinson, who gave up the manufacture of the heavier class of goods, confining himself to valleys, hips, crests, red floor-squares, and hand-made tiles. A part of the works is now carried on by Mr. Haughton of Broseley, and the other portion by Mr. William Jones of Calcutts House, Jackfield.

At the beginning of the last century the Coalford Brick and Tile Works were carried on by William Davies, who had the whole of the works, which were afterwards divided between his two sons, Thomas and George, and Hezekiah Hartshorne. Thomas Davies carried on his portion of these works for many years, and at his death Mr. Enoch Hopley, who married Sarah, daughter of Mr. Thomas Davies, succeeded and carried on the work of improvement in his blue, buff, and red roofing tiles, crests, ridge ornaments, coping bricks, chimney tops, water pipes, and flooring squares. Afterwards they were in the occupation of Mr. Thomas Hopley and Mr. Robert Duncan, who were succeeded by Messrs. William and Peter Jones, the present proprietors of the works, now called the Excelsior Broseley Roofing Tile Works. The Messrs. Jones are in possession of machinery capable of turning out from 30,000 to 35,000 tiles per day. They employ from eighty to ninety men and boys, including thirteen clay-getters or miners.

The works of Exley and Sons are in great part more modern than those already noticed, and have the advantage of being compact and complete in their arrangement, more particularly with respect to the grinding and preparation of their clay, drying-sheds, and kilns; whilst their close proximity to the railway, with which they are connected by a siding, affords facilities for sending their goods to all parts of the country. As coalmasters also they have special advantages over some of their neighbours. Having been the contractors for the erection of Broseley church, Mr. Exley, senior, had the advantage of knowing something of the requirements of the building trade. Among their productions will be found ordinary fire-bricks, squares, burrs, hips, gutters, chimney-pots, flooring-squares, crests, grooved, rolled, flanged, and ventilating ditto; also ornamental tops for insertion in grooved ridges, socket and water pipes, skirting and garden-edges, &c.

The late Mr. Joseph Exley, who succeeded his father, during the last quarter of the century established works on an extensive scale at Sweyney, which at the time of writing have proved very successful.

The Milburgh Tileries of Prestage & Co. were founded in the latter half of the nineteenth century by Mr. Thomas Prestage for the introduction of external ornamentation in building, at the same time making the staple articles of the district the basis of the business. The works, together with the recently established Wallace Tileries, are now carried on by Mr. D. L. Prestage, son of the founder, who informs us that the Milburgh Tileries employ about seventy

hands and the Wallace Co. about twenty-five, the output of the former being over four million tiles a year, and of the latter, which are not quite complete, nearly two million. Mr. Prestage also informs us that their company are the first in the district to use gas engines in connexion with the working of brick and tile machinery, and also, he believes, the first to adopt a 'tunnel drier' for drying roofing tiles. Tunnel driers have been used for drying bricks and for other purposes, but Mr. Prestage does not think the difficulties of successfully drying roofing-tiles by this means had ever previously been overcome. At the Milburgh Tileries the clay seam is 45 yds. from the surface, and at the Wallace 83 yds.

On the same estate, that of Mr. Jenkins, but nearer to the Severn, and partly on ground formerly occupied by the Calcutts Iron Works, are the clay works of Mr. John Doughty, which he informs us have been in existence for a hundred years and upwards, and the staple trade of which consists of roofing tiles.

In addition to the works already noticed are those of George and Francis Davies, now carried on by the former, where a similar class of goods is manufactured.

High up on the opposite bank of the Severn, and near the lodge of the park of the old manor-house of Madeley, are the clay works of George Legge & Co. These were formerly carried on by Mr. George Davies, brother of Thomas, previously noticed, and his son; afterwards by Mr. Thomas Smith, architect and builder, from whose trustees they were purchased by Mr. George Legge, father of the present proprietor. The works are said to have been first established in 1780. The clays in use are precisely those used in the Broseley Brick and Tile Works, but while they are found at a depth of 100 yds. or more in other places, they here crop out at the surface or are found very near to it. The works are chiefly employed in manufacturing the Broseley pressed roofing and ridge tiles, both plain and ornamental, in blue, brown, brindled, strawberry, and red colours, also bricks, hip and valley tiles, red and blue pressed flooring-squares, street-paving bricks, border tiles for gardens, and all kinds of drain and socket pipes from 2 in. upwards.

The Malinslee Clay Works are carried on by Messrs. Wilkinson and Boulton. The clay used is different from that previously noticed, and when burnt produces articles of a rich brown or chocolate colour, such as are used in building, consisting of bricks, tiles, &c. The output of the works is considerable, and a large number of men and boys are employed.

In addition to the works already described, there are a number of others in the county where surface clays are generally used, and mostly on a smaller scale than those mentioned.

The Lilleshall Co., Ltd., have two brick-works, one at Donnington Wood and one at Snedshill, the former for ordinary building bricks, of which there are made between three million and four million annually. These works were only put down about thirty years ago, and contain machine presses, the bricks being burnt in a Hofmann kiln. Prior to their erection the company had other works in Donnington Wood where the bricks were made by hand, but these were closed when the new works were started. The Snedshill works were put down for the purpose of making fire-clay bricks. These works are a valuable accessory to the other departments, a great number of fire-clay bricks being used in the mills, forges, furnaces, and steel works. The fire-clay for making the bricks is raised from the mines of the company. The works have been in existence more than fifty years.

The Madeley Wood Co. have extensive brickworks at Blissers Hill, where Broseley roofing-tiles, hips, valleys, &c., are manufactured. The clay to make these is got from a depth of 100 yds., and then allowed to weather for several months before being fit for use.

## ENCAUSTIC AND TESSELATED TILE WORKS

Priority must be given to the works of Craven Dunnill & Co. at Jackfield, not only on account of an ancient pottery having existed here, as previously stated, but because the first endeavours in this county to resuscitate the lost art of tesselated tile making were made here. Early in the history of the revival of the art Mr. Exley was induced by Mr. Peter Stephan, a modeller, to enter upon the manufacture of tesselated tiles, under his guidance; but Mr. Herbert Minton, who had obtained a share in the rights of the original patentee, put a stop to the proceedings by threatening Mr. Exley with an action.

The clays used at these works to-day may be traced in the production of various articles to very remote periods of British history. That the Roman potters used them sixteen centuries ago in the manufacture of things both of use and ornament is the opinion of competent judges who have critically examined the various relics unearthed at Uriconium and compared them with the manufactures of the district, as jugs, mugs, bowls, colanders, and dishes.

With regard to tesserae, however, whilst the Roman skilled labourer had to hunt out bits of yellow limestone and of greenstone or trap at the foot of the Wrekin, and then with infinite patience and labour chip them into shape, the Jackfield workman of to-day effects his object by the simple turn of a screw.

The examples of mediaeval tiles (encaustic) found at Wenlock, Buildwas, and Shrewsbury Abbeys, as well as those at Kemberton and Sutton Maddock churches, give good ground for the supposition that tiles were made in this neighbourhood from 1300 to 1500. Indeed, the close similarity of design between specimens from Christ Church Cathedral, Dublin, and other distant sources, and local examples, suggests that noted tile-works may have been in existence here for centuries. At the restoration of Kemberton church some years ago a 'coating' of red terra cotta of fourteenth-century work was found encasing rubble columns.

The first attempts to resuscitate the art in this county, as previously stated, were made by Messrs. Peter Stephan, Challoner, and Exley at Jackfield, soon after the late A. W. Pugin had induced some persons in the Staffordshire Potteries to attempt its revival, between the years 1835 and 1845.

The first designs were naturally crude and spiritless; the mistake, as in many other instances, was committed of attempting something which with but little expenditure of time and thought might catch the uneducated eye—the object being to produce quantity rather than quality.

But as the capabilities of the clays were tested and found equal to the manufacture of the higher conceptions of art, great improvements were effected in the variety and quality of the designs. The tiles themselves are no longer mere reproductions of ancient patterns, but possess originality of form and beauty of finish as well as variety.

For the erection of the present building, the ricketty and ill-shaped sheds which satisfied the old potters were swept away, and the new works, which cover about three and a half acres of ground, have taken their place. They are arranged in blocks on the most approved plan, suited to the several departments, and succeed each other in regular order, from the tempered clay and slip kilns to the press shops, drying stoves, kilns of various kinds, sorting houses, warehouses, &c.

The clay, which has lain probably for years exposed to the disintegrating and mellowing action of the weather, after being reduced to a state of cream by the blunger, and freed from all foreign and gritty matter by being passed through sieves of fine silk, is pumped into tanks and dried in the drying kilns; after which it is reduced to a state of dust in the mill and, having been damped until it has absorbed from 15 to 18 per cent. of moisture, is removed to the pressing-room. Here it is placed in a series of wells or boxes of the required sizes, and is made to take the impression of the die by the pressure of one ton to one square inch of surface. This is what is understood as the 'dry process,' which has only been invented in recent years by a Mr. Prosser.

For the 'wet process,' which has been used from the early Roman and Italian times in making encaustic tiles, the clay is brought to the mould in a plastic state. In this case the pattern is first impressed from a plaster of Paris mould, the pressure required being but trifling compared with that just described. A sheet of refined clay of the desired colour for the ground of the pattern having been placed in a mould, a layer of coarser clay is laid upon it and the whole subjected to screw pressure, which consolidates the two kinds of clay, at the same time perfectly impressing the pattern of the mould. The superfluous clay having been removed with a scraper, a second veneering of fine clay, similar to that used for the face, is placed on the back; the tile is removed from the mould and the depressed parts of the design are filled with clay of one or more colours, which is poured into them in a semi-liquid state, technically termed 'slip.' When sufficiently dry, articles made by this as well as by the dry process are put into saggars, which are piled one upon the other in the kiln or oven till it is full, when the entrance is bricked up and well plastered. Fires are then lighted without, and send fierce flames up the internal flues continuously for five days and four nights. When sufficiently cooled the contents are removed to the warehouse or show-room, as the case may be.

Many beautiful examples of encaustic tiles have been produced after designs by Waterhouse, Goldie, Gibbs, Bentley, and others. Special attention has also been devoted to the collection and copying of genuine mediaeval tiles, to the production of difficult mouldings, the manufacture of mosaic, also to the imitation of Moorish, Hispano-Mauresque, and Indian shapes, special styles of underglaze painted work, and lustres of all sorts. When the introduction of self-coloured majolica tiles superseded the encaustic tile for glazed work, Messrs. Craven Dunnill & Co. were the pioneers till all other makers took up the work, when they again struck out with tiles of this kind, but differing in decoration from the common productions in demand.

The directors of the firm are Sir A. H. Brown, J.P., G. Smith, and R. F. Ayre, with F. Rawdon Smith as managing director.

Messrs. Maw & Co. first began experimenting with Shropshire clays at Worcester, on premises

formerly occupied by the Worcester Porcelain Company, and later for the manufacture of encaustic tiles by Mr. Fleming St. John, from whom they purchased the moulds, &c. It soon occurred to the Messrs. Maw that instead of incurring the expense of the carriage of Broseley clay and Shropshire coal by barges down the Severn, it would be wiser to remove their works to the neighbourhood whence they were obtained, and in 1852 they removed their plant to the site of the old ironworks at Benthall. Here the two brothers, George and Arthur Maw, spent some years in costly experiments, which did not yield them any adequate return in a mercantile sense for some time. Mr. Arthur Maw not only studied the nature of the materials he had to deal with, but he paid considerable attention to the history of the art, of which he wrote an interesting account for the *Encyclopaedia Britannica*, in which he gives a minute description of the processes employed in the modern manufacture of tesselated and encaustic tiles, describing them under the heads of 'the plastic' and 'semi-dry' or dust processes. He says :—

> The former, which was the only one employed up to the year 1863, is in every essential point the same as that used in mediaeval times, differing only in the greater finish and perfection which modern appliances have effected, and probably also in the material of the moulds. It is not known of what those anciently used were made, but conjecture has suggested wood, fired clay, and stone.
>
> The great difficulty of the manufacture consists in the necessity for introducing into a single tile the variety of different coloured clays or 'bodies' which together compose the design, it being essential that they should not only be perfected by the same amount of heat in the process of firing, but that they should possess an equal contractile power during each stage of the manufacture.

For purposes of paving, most of the modern encaustic tiles are used in the 'bisque' or unglazed state ; where glazing is found necessary it is effected by dipping them in a combination of lead, alkaline salts, felspar, and silica, finely levigated in water, which is fused by passing them through a kiln constructed for the purpose.

The patterns used by Messrs. Maw are the work of some of the first designers of the day, as Messrs. Digby Wyatt, George Goldie, J. P. Seddon, George E. Street, J. Burgess, Lewis F. Day, Walter Crane, and others.

They obtained a first-class medal at the Exhibition of 1862, where besides other productions they exhibited their well-known mosaic of 'The Seasons,' expressly designed for them by Sir Digby Wyatt, and now in South Kensington Museum, which led to their being commissioned to execute a mosaic frieze for the inner quadrangle of the India Office. First-class medals were also awarded at Dublin, 1865 ; Paris, 1867 ; and Philadelphia, 1876. At the International Exhibition of 1871 a portion of the beautiful staircase in enamelled terra-cotta executed by this firm for Sir D. Majoribanks was shown, and the chimney-pieces manufactured by them for the board room of the South Kensington Museum, and for the Museum of Science and Art, Edinburgh, also of enamelled terra-cotta, are deserving of notice. The specimens produced by them in various branches of art for the Paris Exhibition of 1878 contained some striking novelties.

The following are the particulars to which the attention of the jury was called with regard to Messrs. Maw & Co.'s collection—First, novelty as regards lustres on tiles, tazzas, &c. These are reproductions of a mediaeval art, hitherto almost entirely lost. The red lustre (known as 'ruby') and the yellow (similar to that known in old Italian examples as 'd' oro') are the most valuable and difficult of production. Maw & Co. also showed a number of transparent and opaque enamels on tiles and majolica ware, which are of a novel and striking description.

Messrs. Maw were the first in this country to produce the transparent *celeste* or turquoise blue employed in ancient Chinese enamels, specimens of which were exhibited in the Paris Exhibition of 1867.[2] As the demand for their productions increased and the processes themselves multiplied, the Messrs. Maw commenced in 1871 to erect the commodious buildings at the Tuckies to which they removed in 1883, and to which they have since made additions. The firm have taken out patents for improvements at various times in the processes of the manufacture of the goods for which they have justly gained celebrity.

In addition to those already referred to Messrs. Maw & Co. have also exhibited their productions at the following exhibitions :—

Paris, in the year 1889, where they obtained a gold medal ; Chicago, in the year 1893, where they gained three highest awards.

Messrs. Maw & Co. make a special feature of the application of non-reflective glazes and enamels to decorative tiles. By a special treatment the reflective quality of the surface of the ordinary glazed or enamelled tile, which is objected to by many, is entirely avoided. Since the manufacture of these was commenced a very considerable demand has been created for them for the decoration of walls and fireplaces.

The Broseley Tileries occupy a site from which, by the operation of nature at some distant period in the earth's history, how distant no one ventures to guess, the coals have been removed, all excepting a few thin seams, and about a couple of hundred yards further south the very founda-

[2] Jewitt, *Ceramic Art.*

tions are laid bare and visible to the eye. But the waters which destroyed the coal measures left a deposit of fine sediment which became indurated clay. It is the same clay we have already mentioned in connexion with the Jackfield works, and has here been also wrought into encaustic, glazed, and tesselated tiles for churches, public buildings, halls, corridors, vestibules, &c. They are extensively used, and pavements have been laid of them in the Home and Colonial Offices, Parliament Street; the Royal Academy, Burlington House; the Law Offices, Lincoln's Inn, &c. The company also produce roofing tiles.

# QUARRIES

Early evidence abounds of the quarrying industry at an early date in the county. A grant was made in 1352–3 at Shrewsbury of a plot of land called 'Stanydelf' (where stones are delved or dug up).[1] John de Charlton, Lord of Powis, gave the Friars Minor of Shrewsbury a stone quarry to help build the church of St. Julian in that town.[2] 'Stone of a blue girth' was dug at Bridgnorth on Hope Hill in Leland's time.[3] Frequent reference is made in ancient records to the quarry belonging to the corporation of Shrewsbury, known as Nobold Quarry. In 1585, it was agreed, by order of the corporation, that 'the quarry of stone being in the Water Quarrell behind the walls, shall be reserved for the sole use of the Corporation.'[4] Between this date and 1589 it would appear that the 'quarry behind the walls' was temporarily closed for a length of time unknown, for in the last-named year it was ordered 'to be opened and set for the getting of stone.'[5] Grants of stone from this source were frequent; one such grant being in 1703 to the parish of St. Julian for the repair of their steeple.[6] Again in 1708 stone was voted by the corporation for the repair of Mele Bridge.[7]

It was the custom of copyhold tenants in the seventeenth century to dig freestone on their copyhold land, and sell the same. An instance of this occurs in 1607, when John Collyns, copyholder of Halesowen, dug freestone in 1607 upon his land, and sold it to one John Ireland *alias* Chambers for 5*s.* a stone, and John Collyns, his son, also dug freestone upon the same land, and sold the same to the then Lord Dudley.[8]

In the records of Bishop's Castle in 1617 is an order for the 'riddinge' (cleansing) of the quarries 'till stone be found to the use of every man as he shall have need that dwelleth within the town.'[9]

The 'ballstones' of the Wenlock Limestone formation, some of which have been known to attain a diameter of 80 ft., have been largely quarried out as the best flux for smelting iron.[10]

The sandstone or grit of the Lower Silurian Rocks is of so pure a quality, and so free from iron, that it has been quarried for use in the china manufactory at Coalport.[11]

Aikin, on his mineralogical tour through the county, notes the frequent use made of the white freestones of Grinshill,[12] resembling Portland stone, for the bridges, churches, &c., of modern Shrewsbury.[13]

Gough relates that there was on Harmeare Heath, Myddle, 'great store of freestone, very useful for building.' One shilling was paid to the lord of the manor for every 100, i.e. 6 score ft. of stone, foreigners paying 1*s.* 6*d.*[14]

The commissioners appointed in 1839 to select a suitable stone for building the Houses of Parliament included in their inspection of quarries that of Highley, which yielded a sandstone at a depth of 6½ ft. of two kinds, one an ashlar or building stone, priced at 1*s.* per cubic foot, and the other a grinding or gun-barrel stone, valued at 2*s.* 3*d.* per cubic foot. This stone was used in the construction of Stourport, Worcester, Bewdley, and Gloucester bridges.[15]

At a quarry at Stanton Lacy slate roofing slabs were dug out in the reign of Richard II, the quarry having been recently found in a wood at that place. The usual price was 6*s.* 8*d.* per 1,000, besides 6*s.* 8*d.* paid for digging them.[16]

The hard igneous rock of the Clee Hill by common consent is considered one of the best road metals in England. Little notice appears to have been taken of this valuable mineral until the late Mr. Thomas Roberts, J.P., of Ludlow, turned his attention to its development, and in 1867 formed the Clee Hill Granite Company.

[1] *Shrops. Arch. Soc. Trans.* ii, 91.
[2] Ibid. x, 161.
[3] Leland, *Itin.* iv, 99.
[4] *Shrops. Arch. Soc. Trans.* ii, 158.
[5] Ibid. 161.
[6] Ibid. x, 197.
[7] Ibid. xi, 202.
[8] Exch. Dep. by Com. Hil. 5 Jas. I, No. 17.
[9] Rec. Bishop's Castle, 4 Oct. 1627, fol. 95*b*.
[10] Murchison, *Silurian System*, 210–11.
[11] *Geol. Soc. Trans.* v, 416.
[12] A keystone weighing 10 tons 856 lb. was brought from this quarry for the centre arch of the English bridge at Shrewsbury in 1773, and drawn to its place by twelve horses. *Chron.* 20 March, 1773.
[13] Aikin, *Tour*, 188.
[14] Gough, *Antiq. of Myddle*, 12.
[15] *Rep. Com. on Building Stone* (1839), 553.
[16] Mins. Accts. bdle. 967, No. 27 (Stanton Lacy), 13 Ric. II.

The word 'granite' is used in the title of the company rather with reference to the hardness of the stone than to its geological nomenclature. The works of late years have been very much developed, and have now attained considerable proportions, including basalt, coal, lime, and clay works, which provide employment for more than 400 men and boys.

The local name for the rock worked in the quarries, of which there are three, is Jew-stone, but the original Welsh name is Dhu-stone, referring to its colour, dhu signifying black. It is part of a volcanic overflow which forms the capping to the coal measures previously referred to, and is of an exceedingly fine grain and practically inexhaustible ; for although the output is computed at 100,000 tons per annum, it bears a small proportion to the general mass ; the pipe or channel which gave vent to this overflow of two miles in extent is in itself found to be 900 ft. wide and 240 ft. thick near the centre, and of unfathomable depth. The stone is worked in quarries on the face of the hill, by lifts about 50 ft. in depth, with a long face forming almost a semicircle. It is removed chiefly by blasting, bars only being used where there are open joints to apply them. The workmen try to produce large blocks as far as possible, in order that they may be split up for setts. The tough nature of the stone necessitates the use of the best steel tools in the hands of good workmen accustomed to this kind of rock. It takes two men an hour, one striking and the other turning the drill, to bore a hole $1\frac{3}{4}$ in. in diameter and 1 ft. in depth. The drill, which is locally known as a 'jumper drill,' is made of the best octagon steel, and varies in length from 3 to $7\frac{1}{2}$ ft., according to the depth of the boring. A heavy hammer, weighing 28 lb., called a 'burster,' is employed for breaking up rock in the face. 'Fire-setting' is employed to split large masses of rock which have been displaced, where pop shots might shake the stone and plug, and also prove too expensive. This process, which is commonly practised by the natives in the stone quarries of India and Burmah, as well as by the miners in Norway, consists of lighting a fire on the top of a large mass of rock, which in a short time, owing to the variation in temperature, is split up into pieces of more convenient size for working. The large blocks of stone are sent in wagons to the sett-makers, who by means of steel hammers of varying weights and sizes called respectively 'bursters,' 'nobbing,' and 'dressing' hammers, dress and trim them to the largest possible sizes. The smaller stones, not suitable for setts, are conveyed in wagons to the stone-breaking yard, which adjoins the main quarry, where they are reduced to the required size for road metal either by stone-breaking machines or by hand. Two hundred men and boys are engaged in this work, and it is estimated that each man can break one cubic yard per day. The screenings or chippings are used as a substitute for sand, both in mortar and concrete, where good clean sand is not obtainable.

When ready for the market the stones are filled into steel wagons, and tipped into trucks, either those owned by the company, of which they have 200 capable of holding from 8 to 10 tons each, or into those of the railway company. A branch of the Great Western and London and North Western Railway joint line from Ludlow communicates with the quarry wharf, where twenty-seven trucks can be loaded at the same time.

The haulage from the main quarry is effected by two locomotives, horses also being employed ; whilst from No. 2 quarry an old traction engine is used to haul the wagons up an incline communicating with the stone-breaking yard. The tramways on which the wagons run are of 3-ft. gauge and extend for no less than 14 miles.

The tough nature of the stone procures for it a ready market, either as setts for paving or for macadam in large towns where the traffic is heavy, as it produces very little dust in dry weather and very little mud in wet weather.

The Clee Hill Dhu Stone Company, of which Mr. A. S. Townsend is manager, was formed in 1863. The height of the face in the central quarry is 145 ft., and, as in the case of the quarries previously described, the columns are of great but unknown depth beneath the level of the present floor. Besides supplying the road metalling, the company make 'Adamantine Copings, Beds and Stone Blocks.' The specific gravity of the stone is given as 2·88, and its component parts as augite and felspar. The remarkable toughness, as well as the hardness of the stone, was demonstrated by tests recently made, for it required the enormous weight of 1,340 tons upon a superficial foot before the stone cracked even slightly, and as much as 1,808 tons per square foot to crush it. When it is remembered that the greatest concentrated weight which can be brought upon a public highway is represented by a traction engine weighing 16 tons, or 4 tons per wheel, it is clear that the use of this stone reduces the wear to a minimum.

In a pamphlet issued from the Home Office, Whitehall, for the information of surveyors appointed under the New Highway Act, the following occurs : 'The Whinstones of Northumberland and the Dark Basalt of the Clee Hills in Shropshire are almost perfect as road stones.'

Numerous testimonials to the durability and toughness of these stones have been received from road surveyors in the metropolitan and provincial areas, demonstrating its exceptional economy even when used at distances of 200 and 250 miles from the quarries, and this not-

withstanding the heavy railway freight which such long distances necessarily entail.

There are a number of other quarries in the county. We refer elsewhere to the limestone quarries of Oswestry and Presthope worked by the Lilleshall Company, and to those of Wenlock worked by the Madeley Wood Company for the melting of iron ore and for lime for agricultural purposes. That at Bradley near Much Wenlock, worked by Mr. Boulton, employs sixty men.

There are also a number of freestone quarries from which stone is extracted for building and monumental purposes at Grinshill, Church Stretton, Knowbury, Ludlow, and at Ketley near Wellington.

Alveley Quarry yields hard gritty sandstone such as we find occurring at Highley and Stanley, the stone from this quarry having been much in demand in the early part of the last century for hearths for blast furnaces, as it is capable of resisting great heat. Sir R. Murchison mentions it in 1839 as being quarried for grindstones for polishing Birmingham gun-barrels.[17] The stone is still used for that purpose among others, grindstones weighing from a few pounds to over three tons being made by the present proprietor, Mr. William Webb. The stone is also employed for building churches, schools, bridges, &c., as well as for dressings in all kinds of buildings. The annual output is about 1,000 tons, and the quarry finds employment for fifteen men. Within a short distance there are other quarries where the same stone is worked.

Much has not been doing at the Steeraway Lime Works, Wellington, compared with former years. The place bears traces of lime-burning and quarrying for a considerable time, perhaps two or three centuries.[18] The last three years have averaged about 2,000 tons of limestone per year, and this diminishes by one-third when burnt into lime. The works are on the estate of the Right Hon. Lord Forester of Willey Park, and were worked by Mr. Robert Emery of Burcot in the thirties, and about ten years later by the Lilleshall Company. Then for a very short time the Lord Forester of that day worked them on his own account, and in 1854 let them to Messrs. Richard and Thomas Groom and William and John Ison, all now deceased, who carried them on under the name of the Steeraway Lime Company, under which name they are at present worked by Mr. John O. Owen.

The stone obtained is a carboniferous limestone which has been thrust to the surface by the igneous rocks of the Ercall and Lilleshall Hill, bringing up the lower Coal Measures with it. It is a mere fringe of the mountain limestone of Derbyshire where it attains an enormous thickness, and is again represented on the north-eastern side of the Brown Clee Hill, where it is also quarried, and at a higher level than here.

### LIMEWORKS

The Lilleshall Company, Ltd., have two limeworks and limestone quarries; that at Presthope, near Much Wenlock, has been in the hands of the company from fifty to sixty years. The quarry is of large extent and there are three 'running' kilns, besides a number of 'pot' kilns. The lime made, besides being of good building and agricultural quality, is an excellent hydraulic lime and substitute for 'Lias.'

The Nantmawr works of the same company, near Oswestry, were only taken over by the company from the late Mr. J. Parson Smith in 1899. There is a splendid quarry and five large 'running' kilns. The limestone, besides being made into lime, is used by the company and sold for fluxing in blast-furnaces. The lime is particularly suitable for plastering and is largely used in steel works.

## COAL AND IRON

The interdependent relation of these two industries of Shropshire to one another necessitates their being dealt with side by side. Iron manufacture invariably accompanied coal-mining, one outlier of the Broseley district, that of Rowton, being the sole exception; the latter industry, in the seventeenth and eighteenth centuries at least, being carried on there separately.

In 1260–3 Walter de Clifford, lord of Corfham, granted to Sir John de Halston licence to dig coals in the forest of La Clie (Clee Hills) to sell or give away.[1]

Among the receipts obtained by the abbot of Wigmore from Kayham and Switton in 1291 were 'profits from a coal mine, 5*s*.'[2]

Coal-mining was carried on on a limited scale in the lands of Wenlock Priory; in 1541–2 the rent of a coal-pit, called 'a cole delffe,'[3]

[17] Prestwich, *Geol. Soc. Trans.* v, 394.

[18] In the forest of Wellington there were in 1255 two lime kilns, at one of which 300 oaks had been burnt, at the other 200 oaks. *Rot. Hund.* (Rec. Com.), ii, 56.

[1] Eyton, *Antiq. Shrops.* iii, 27. 'Plenty of cole yerth stone nether, exceedinge good for lyme, whereof there they make muche, and serve the contre about.' Leland, *Itin.* viii, pt. ii, 62.

[2] Eyton, *Antiq. Shrops.* iv, 362.

[3] Delf—a common vernacular term for a vertical pit, from delve. Galloway, *Ann. of Coal Mining*, 17.

was accounted for at Burwardesleye (Broseley), 1*s.* 4*d.*[4]

In 1536–7 the farm of a coal mine belonging to Wombridge Priory[5] was accounted for at 100*s.*[6]

In writing of these industries a preliminary glance at those portions of the county which supply the raw material is desirable.

The Coal Measures of the county differ considerably in size and shape, and also in the quantity and quality of their products.

The larger proportion of the area is occupied by Upper Coal Measures only, which contain no ironstones, and what few coals they do contain are so sulphurous in character as to be quite unfit for the purposes of iron manufacture, though useful for domestic consumption and well adapted to the manufacture of bricks, tiles, and pottery, in which they are largely used.

Their range is extensive; they are found in the Oswestry district, constitute the whole of the Shrewsbury Coalfield, and continue more or less uninterruptedly as far south as the county boundary near the town of Bewdley.

Commencing with Oswestry, it may be remarked that that portion which is productive of coal is very limited, and occupies but a small area between the town and the hills of Llanvorda, Trefonen, Treflach, and Sweeny. It contains only two seams of coal worthy of extraction, the upper being 4 ft. thick, and of tolerably good quality; the lower 6 ft. is of comparatively little value. Near their outcrop these seams are separated by about 12 yds. of strata composed of shale and clod, with thin courses of sandstone.

In one portion of the field the Ruabon seams are said to come in, and altogether, about the middle of the nineteenth century, 40,000 tons of coal per annum are said to have been raised.

Coming to the Shrewsbury field, we find that at Hanwood and Shorthill there are three collieries at present working, viz., the Hanwood and Shorthill Collieries, owned by Mr. Atherton; Arscolt Colliery, owned by Mr. Smallshaw; and the Moat Hall Colliery, owned by Mr. Shorthouse. They are all working the same seam of coal—the Half Yard Seam—and employ between 350 and 400 men.

The quality of the coal is good, and it finds a ready sale. This district varies from the Leebotwood and the Pontesbury district, where they have three seams called the Half Yard, Yard, and Thin Coal. The two former coals, however, are very inferior in quality, while the latter is good coal, but too thin to be profitably worked, as the seam is only 14 in. thick.

These coals from time immemorial have been worked in the Shrewsbury Coalfield, and much nearer to the town of Shrewsbury, as at Emstrey and Uffington, and it is curious to note the opposition and prejudice to early mining in these districts. We find, for instance, that John Kaye, founder of the college at Cambridge bearing his name, writing on one of those fearful epidemics then prevalent, called the Sweat, states that it originated here, being caused by the unwholesome vapours arising from mines, and spread over the whole of England.[7]

As an instance that our countrymen were not much influenced by the doctor's reasoning, we give an entry in the corporation books, in the reign of Elizabeth, setting forth a mining project, originated by the worthy inhabitants of Shrewsbury:

20 Dec. 1571 (14 Eliz.), They likewise be aggreed that, yf there shall not amounte to the some of £100 of benevolence towardes the fyndinge of the colle pit, that there shalle be a sessement of them which are not benevolent towardes the same.

An extract from a manuscript chronicle tells the person by whom, and the place where, the search was prosecuted:

This yeare, and the x. of Marche, Mr. Richard Gardner, of the towne of Shrewsbury, dyer, and free of the drapers' company, attemptyd, and put in proofe to fynde out colles about the towne in soondry placys, and in one place in especaill, callyd Emsterie haye, harde bye the sayde towne, he founde by hys greate dyligence and travell greate store of secole, the which is lyke to come to sutche commoditie, bothe for riche and poore, that he ys not onely woorthy of commendacon and mayntenance, but also to be had in remembrance for ever.

Associated with these thin coal seams is a thin bed of limestone, which has been locally exploited for agricultural purposes only, and furnishes no contribution to the supply of limestone needed in the manufacture of pig iron, this being obtained from other sources of supply situated within the county, the quarries near Much Wenlock, and those near Llanymynych, in Silurian and Carboniferous strata respectively, meeting all requirements.

At a lower geological horizon than the Coal Measures above described, and for the most part covered by them in the Coalbrookdale and Forest of Wyre Coalfields, but partly exposed in the former, and wholly so in the outliers of Shirlett, Brown Clee Hills, and Titterstone Clee Hills, lie those valuable coal measures, containing rich ironstones and sweet coals, which for more than a century have supplied the raw material out of which the famous cold-blast pig-iron of Shropshire has been manufactured, a product

[4] Dugdale, *Mon.* v, 81.

[5] *Valor Eccl.* (Rec. Com.), iii, 194.

[6] 'Coals be digged hard by Ombridge, where the Priory was.' Leland, *Itin.* vii, 20–5.

[7] Owen and Blakeway, *Hist. Shrewsbury*, i, 48. At the October Sessions of 1730 at Shrewsbury, Mr. Richard Hartshorne and Mr. Thomas Fferyday were discharged from the indictment against them for digging and sinking coal-pits in the highway. *Shrops. Co. Rec.* No. iii, p. 75.

which, notwithstanding all the modern improvements in the manufacturing art, still holds its place in the first rank for quality, in great measure due to the excellence of the raw material.

We will now turn our attention to these valuable beds of coal and ironstone, commencing with the most westerly in the county, the Brown Clee Hills, which has the distinction of being the highest coalfield in England, its elevation being more than 1,800 ft. above the level of the sea.

Judging from the primitive way in which the coal seams here close to the surface have been worked, the *modus operandi* of the first exploitation of this coalfield appears to have been as follows :—Having excavated a shaft, or rather a hole, from the surface to the base of the coal seam, the excavation was enlarged at the bottom until it had assumed a bell-shaped form, and as much coal extracted as was consistent with safety ; when this limit was reached, another and similar excavation was made in close proximity, and so the process was continued. But as the depth from the surface increased a better system became necessary, proper shafts had to be sunk, and roadways driven out to considerable distances, and the minerals raised by means of a windlass or hand-turn, finding employment for two or three men.

As these surface supplies became exhausted still deeper shafts had to be sunk, and better appliances for winding employed.

Coming to more recent times, when actual records supplant inference, we find that many experiments were made by a Mr. Lewis, under great difficulties, in search of coal, for he frequently had to encounter intrusions of basalt, which not only produced extensive faults, but altered the character of the mineral with which it came in contact.

In one of the shafts which he sunk, after passing through 91 yds. of overlaying measures, he reached a 4-ft. coal of good quality, after penetrating which, and a further succession of strata 34 yds. in thickness, in place of finding another seam of coal, he came upon a mass of igneous rock of a dingy red colour, known to geologists as 'Trap-wacke.' Having penetrated this mass a further depth of 22 yds. without finding any change in its character, he made a horizontal drift across it in a westerly direction, and at a level not far below its summit, with the result that in a few yards the coarse grit and conglomerate of the Millstone Grit were met with, proving that the bottom of the coal measures had been touched. A similar drift having been carried in the opposite direction, but with an ascending inclination, the red mass was penetrated in the course of a few yards, and coal measures again reached.

These explorations were made in the fourth decade of the nineteenth century, since which time subsequent workings have completely exhausted the minerals except the ironstone.

As in mining, so in the manufacture of iron, operations seem to have been carried on at a very early period on these hills, by means of wind furnaces, which consisted of a pile of stones so placed as to allow the westerly winds, which sweep across these hills with terrific force at certain times of the year, to enter.

There are a number of these piles of stones still to be seen, and Leland, writing in the sixteenth century says in his *Itinerary* :—'The Clee Hills be holy (wholly) in Shropshire, and there be "blow shops" on these hills.'[8]

Some four miles farther south from here is the Titterstone Clee Hill, having an altitude above the sea level of 1,750 ft. It is situate at the southern extremity of the county, on the borders of Herefordshire, some five or six miles east of the town of Ludlow. It possesses a much more valuable coalfield than that on the Brown Clee, and like the latter has been worked from time immemorial, but with superior appliances.

Here again mining operations had to be carried on under difficulties, as over a large portion of the coal-bearing strata is spread a considerable thickness of hard and pure basalt of the same type as that on the Brown Clee, and locally known as Jew-stone, or more correctly 'dhustone.'

In connexion with this coalfield may be mentioned the pits at Cornbrook, Knowbury, Treen pits, the Blue-stone, the Gutter, and Horse-ditch, all of which belong to the same mineral tract. In the Cornbrook district shafts have been sunk with some difficulty through masses of basalt varying from twenty to sixty-four yards in thickness, and are carried down to the most productive portion of the Coal Measures. Here, and at Knowbury, where the coal-beds are free from basalt, which latter occurs only at or near the surface, are found four principal coals known as the Great, Three-quarter, Smith, and Four-feet coals, reached in descending sequence in the order given. In the shales underlying the Great coal and Three-quarter coal, beds of ironstone of good quality occur.

The Botfields—Thomas, William, and Beriah —who worked the mines on the Titterstone for many years, acquired vast fortunes by the ready land-sale and the good prices realized by their coals. To use the language of a friend to whom we applied for information, 'they took the plums.' This gentleman with a friend succeeded the Botfields at Watzell Colliery, but after some years, finding the undertaking unprofitable, they gave it up. A company followed with even less success, so the workings were abandoned and the plant broken up.

Subsequently two pits were opened by Mr. Patchett, of Shrewsbury, under the name of the

[8] Leland, *Itin.* viii, 89*b*. It was the custom to transport the ores of the Clee Hills to the forests on the Teme, where they were smelted with charcoal. Murchison, *Silurian System*, 122.

Catherton Colliery, but after a few years of unprofitable working they also were abandoned; the seams worked at these pits were the 'Great' and 'Smith' coals, the quality being inferior and the cost of getting excessive; they are now exhausted. Below them lies the 'Gutter' coal, not more than two feet thick and of poor quality.

Three pits are still worked intermittently on the Cornbrook side, but as this tract is practically exhausted, little coal is raised, and that of inferior quality: the railway facilities for bringing into the district the cheaper and better coals of other coal-fields prevent these works from being carried on profitably.

At Harcourt where five seams of coals are found, differing from those of the Clee Hill Coalfield, and regarded as a detached fragment of the Coalbrookdale field, spared from denudation, a colliery has long been worked.

At Kinlet the Coal Measures have been much disturbed and dislocated by the intrusion of igneous rock, in a similar manner to that previously described in treating of the Clee Hills Coalfields, the eruptive material reaching the surface at Kinlet Park and forming knolls, which add considerably to the picturesqueness of the scenery.

These measures contain four principal seams, which Sir Roderick Murchison in his day considered might be taken as one; if so, this may be the same coal which we have seen is now worked in the Shrewsbury Coalfield.

Mr. Daniel Jones, F.G.S., is of opinion that the Harcourt and Kinlet seams may be correlated with the deep and shallow seams of Cannock. These coal seams of Harcourt and Kinlet are called 'sweet' coals in contradistinction to the sulphur or stinking coals prevailing in the Forest of Wyre Coalfield, 10 miles farther south; they are good flaming coals, burning freely, and leaving very little ash, and on analysis give the following result:

| | |
|---|---|
| Moisture at 212° Fahr. | 9·70 |
| Volatile hydro-carbons | 33·57 |
| Fixed Carbon | 53·60 |
| Sulphur | 0·33 |
| Mineral matter (ash) | 2·80 |
| | 100·00 |

Specific gravity 1·279, one cubic foot weighing 79¾ lb.

This analysis corresponds to the character of the Randle and Clod coals of the Coalbrookdale Coalfield, which are stated to be the best furnace coals in Shropshire.

Mining has been carried on here more or less continuously during the last century, but has recently received a new impetus and development since the minerals have been leased to the Highley Colliery Company, who have connected their works here with the Severn Valley Railway by means of a branch line, and have greatly extended the underground workings, their output at this early stage reaching 300 tons per diem.

The coals worked at the Highley Colliery are the same as those of Kinlet, the one chiefly worked being 3 ft. 9 in. in thickness, considered by the officials of the colliery to represent the 'Brooch' coal of South Staffordshire; they are also of opinion that other and better coals may be expected when the shafts are sunk deeper. In view of such possibilities the following detailed section of the strata already pierced may prove interesting:

Section of No. 1 Pit, Highley Colliery

| | | Yds. | ft. | in. | Depth Yds. | ft. | in. |
|---|---|---|---|---|---|---|---|
| 1 | Sand and soil | 1 | 2 | 0 | | | |
| 2 | Soft brown rock | 15 | 0 | 0 | | | |
| 3 | Light clunch | 9 | 1 | 4 | | | |
| 4 | Light Rock | 8 | 2 | 3 | | | |
| 5 | Brock-hall coal (Clod, 1 in. / Coal, 1 ft. 10 in. / Clod, 2 in.) | 0 | 2 | 1 | 35 | 1 | 8 |
| 6 | Light blue fire-clay | 6 | 1 | 5 | | | |
| 7 | Light hard rock | 0 | 2 | 3 | | | |
| 8 | Grey metal and clunch | 5 | 2 | 2 | | | |
| 9 | Hard light rock | 0 | 1 | 0 | | | |
| 10 | Red, grey and blue marl. | 5 | 1 | 4 | | | |
| 11 | Coal | 0 | 0 | 2 | | | |
| 12 | Light blue metal | 2 | 2 | 8 | | | |
| 13 | Light rock, bind, and metal | 5 | 2 | 10 | | | |
| 14 | Dark shale | 1 | 1 | 6 | | | |
| 15 | 'Bynd' coal | 0 | 1 | 3 | 65 | 0 | 3 |
| 16 | Light grey metal | 5 | 2 | 0 | | | |
| 17 | Soft grey metal with hard binds | 4 | 0 | 5 | | | |
| 18 | Coal | 0 | 0 | 7 | | | |
| 19 | Soft, dark grey metal | 5 | 1 | 6 | | | |
| 20 | Coal | 0 | 0 | 2 | | | |
| 21 | Soft light metal | 0 | 2 | 2 | | | |
| 22 | Light rock | 22 | 2 | 4 | | | |
| 23 | Light marl | 0 | 1 | 6 | | | |
| 24 | Dark marl | 0 | 1 | 0 | | | |
| 25 | Red and grey marl | 1 | 2 | 6 | | | |
| 26 | Rough pebbly rock | 4 | 0 | 0 | | | |
| 27 | Light rock binds | 6 | 0 | 0 | | | |
| 28 | Light rock | 11 | 2 | 3 | | | |
| 29 | 'Rider' coal | 0 | 1 | 5 | | | |
| 30 | Dark metal | 1 | 0 | 10 | | | |
| 31 | Main sulphur coal (Coal, 5 in. / Metal, 7 in. / Coal, 4½ in. / Metal, 3 in. / Coal, 1 ft. 9 in.) | 1 | 0 | 4½ | 131 | 1 | 3½ |
| 32 | Dark metal | 1 | 0 | 0 | | | |
| 33 | Coal | 0 | 0 | 4 | | | |
| 34 | Dark metal | 0 | 0 | 11 | | | |
| 35 | Rough pebbly rock | 5 | 0 | 0 | | | |
| 36 | Red marl | 0 | 1 | 6 | | | |
| 37 | Light rock | 0 | 2 | 0 | | | |
| 38 | Red marl | 4 | 1 | 7 | | | |
| 39 | Rock binds | 1 | 1 | 0 | | | |
| 40 | Red and grey marl | 3 | 0 | 5 | | | |
| 41 | Light rock | 6 | 1 | 2 | | | |
| 42 | Red, yellow, and blue marls, with bands of rock | 10 | 2 | 0 | | | |

| | | Yds. | ft. | Depth in. | Yds. | ft. | in. |
|---|---|---|---|---|---|---|---|
| 43 | Black shale with ironstone | 0 | 0 | 9 | | | |
| 44 | Light grey and yellow fire-clay | 1 | 1 | 0 | | | |
| 45 | Red and grey marl | 3 | 2 | 7 | | | |
| 46 | Light blue rock | 2 | 1 | 9 | | | |
| 47 | Red marl | 1 | 1 | 5 | | | |
| 48 | Dark metal | 0 | 0 | 4 | | | |
| 49 | Blue and red clunch | 1 | 2 | 3 | | | |
| 50 | Rock and clunch, very rough at bottom | 4 | 0 | 7 | | | |
| 51 | Rock mixed with fireclay and red marl | 2 | 2 | 9 | | | |
| 52 | Dark blue hard rock | 1 | 1 | 1 | | | |
| 53 | Dark metal with sheds of coal | 1 | 1 | 1 | | | |
| 54 | Light fireclay | 0 | 1 | 2 | | | |
| 55 | Light blue rock and binds | 2 | 2 | 1 | | | |
| 56 | Dark clunch | 1 | 0 | 3 | | | |
| 57 | Fireclay mixed with red marl | 1 | 1 | 7 | | | |
| 58 | Dark blue rock with sheds of coal at base | 3 | 2 | 6 | | | |
| 59 | Dark metal | 0 | 0 | 9 | | | |
| 60 | Light rock binds | 1 | 0 | 0 | | | |
| 61 | Red and grey binds with balls of ironstone | 1 | 2 | 10 | | | |
| 62 | Blue rock binds | 0 | 2 | 0 | | | |
| 63 | Hard blue rock | 3 | 0 | 6 | | | |
| 64 | Dark metal | 0 | 1 | 8 | | | |
| 65 | Bastard fire-clay | 2 | 0 | 0 | | | |
| 66 | Red and grey marl | 2 | 0 | 6 | | | |
| 67 | Dark red iron ore | 0 | 0 | 6 | | | |
| 68 | Red and grey marl with rock binds | 3 | 1 | 0 | | | |
| 69 | Hard light blue rock | 1 | 1 | 3 | | | |
| 70 | Black bass with sheds of coal | 0 | 1 | 0 | | | |
| 71 | Very hard dark clunch | 2 | 1 | 0 | | | |
| 72 | Very hard dark blue rock | 4 | 0 | 0 | | | |
| 73 | Dark metal with rock binds | 2 | 1 | 0 | | | |
| 74 | Black slag with sheds of coal | 0 | 0 | 2 | | | |
| 75 | Dark fire-clay | 1 | 1 | 6 | | | |
| 76 | Red and grey binds | 2 | 2 | 0 | | | |
| 77 | Dark bass | 0 | 2 | 0 | | | |
| 78 | Rock binds | 3 | 0 | 0 | | | |
| 79 | Dark rock | 1 | 1 | 0 | | | |
| 80 | Bastard fire-clay | 1 | 1 | 0 | | | |
| 81 | Light rock | 0 | 1 | 0 | | | |
| 82 | Dark bass | 0 | 2 | 0 | | | |
| 83 | Coal | 0 | 0 | 3 | | | |
| 84 | Light fire-clay | 1 | 0 | 0 | | | |
| 85 | Light rock | 1 | 0 | 4 | | | |
| 86 | Dark bass | 1 | 2 | 6 | | | |
| 87 | Grey and red clunch and rock | 1 | 1 | 10 | | | |
| 88 | Rock and binds | 1 | 1 | 6 | | | |
| 89 | Red and grey binds | 1 | 0 | 0 | | | |
| 90 | Very hard light rock | 1 | 2 | 6 | | | |
| 91 | Red, grey, and yellow binds | 2 | 1 | 9 | | | |
| 92 | Grey binds | 0 | 2 | 6 | | | |
| 93 | Light rock | 0 | 2 | 0 | | | |
| 94 | Red marl | 0 | 1 | 6 | | | |
| 95 | Clunch and rock | 1 | 0 | 6 | | | |
| 96 | Light rock with dark sheds at bottom | 2 | 2 | 0 | | | |
| 97 | Red and grey binds | 1 | 2 | 6 | | | |
| 98 | Grey metal with sheds of coal | 0 | 1 | 0 | | | |
| 99 | Light grey rock | 2 | 1 | 9 | | | |
| 100 | Dark metal | 0 | 0 | 7 | | | |
| 101 | Light grey binds | 1 | 0 | 0 | | | |
| 102 | Light rock and coal sheds | 2 | 2 | 0 | | | |
| 103 | Fire-clay | 0 | 1 | 0 | | | |
| 104 | Strong red, grey, and yellow marl | 2 | 1 | 5 | | | |
| 105 | Light rock binds | 0 | 2 | 0 | | | |
| 106 | Dark metal | 0 | 1 | 0 | | | |
| 107 | Light grey binds | 0 | 2 | 0 | | | |
| 108 | Soft dark metal | 0 | 0 | 10 | | | |
| 109 | Dark bass | 0 | 2 | 0 | | | |
| 110 | Dark grey metal | 1 | 1 | 5 | | | |
| 111 | Light grey rock binds | 1 | 0 | 6 | | | |
| 112 | Dark grey metal | 1 | 1 | 8 | | | |
| 113 | Soft dark slag and sheds of coal | 0 | 0 | 7 | | | |
| 114 | Soft fire-clay | 0 | 0 | 9 | | | |
| 115 | Soft dark slag and sheds of coal | 0 | 1 | 3 | | | |
| 116 | Dark grey clunch | 3 | 0 | 7 | | | |
| 117 | Binds and rock strongly shaded with coal | 4 | 0 | 5 | | | |
| 118 | Strong band of ironstone | 0 | 0 | 3 | | | |
| 119 | Very dark clunch, lean ironstone, fire-clay, and marl | 1 | 2 | 0 | | | |
| 120 | Light fire-clay | 0 | 0 | 3 | | | |
| 121 | Dark rock binds, rock and ironstone | 0 | 2 | 6 | | | |
| 122 | Light rock sheds of coal | 1 | 0 | 5 | | | |
| 123 | Dark binds and light rock | 0 | 1 | 6 | | | |
| 124 | Light rock with coal | 1 | 1 | 8 | | | |
| 125 | Dark binds | 5 | 1 | 9 | | | |
| 126 | Clunch | 0 | 1 | 3 | | | |
| 127 | 'Brooch' or 'Five Feet' Coal — Coal batt. 9 in.; Bass, 1 ft. 8 in.; Coal, 3 ft. 10 in. | 2 | 0 | 3 | 291 | 2 | 3 |
| 128 | Rock | 1 | 2 | 6 | | | |
| 129 | Binds | 1 | 0 | 0 | | | |
| 130 | Slag | 0 | 0 | 8 | | | |
| 131 | 'Half-yard' Coal — Coal, 1 ft. 1 in.; Clunch, 2 in.; Coal, 6 in. | 0 | 1 | 9 | 295 | 1 | 2 |
| 132 | Dark clunch | 0 | 2 | 4 | | | |
| 133 | Rock binds and ironstone | 1 | 1 | 2 | | | |
| 134 | 'Four foot' Coal | 0 | 1 | 8 | 298 | 0 | 4 |
| 135 | White clunch | 0 | 1 | 8 | | | |
| 136 | Rock with sheds of coal | 2 | 0 | 10 | | | |
| 137 | Dark strong binds | 1 | 2 | 6 | | | |
| 138 | Black slag | 0 | 0 | 6 | | | |
| 139 | Dark clunch | 1 | 0 | 2 | | | |
| 140 | Black slag | 0 | 1 | 8 | | | |
| 141 | 'Two foot' Coal — Coal, 1 ft. 1 in.; Slag, 4 in. | 0 | 1 | 5 | 305 | 0 | 1 |
| 142 | Clunch | 0 | 0 | 3 | | | |
| | Total depth | 305 | 0 | 4 | | | |

Besides the improved facilities made by this company for the carriage of their coal to the main line of railway, new hauling machinery for the conveyance underground of their coals from the working faces to the pit bottom has been laid down. Modern plant has also been erected for the purpose of manufacturing the fine dust from the coal into a portable fuel termed briquettes, by mixing the same with pitch and subjecting it to pressure.

The Severn Valley Colliery, Billingsley, is situated three miles from Highley and seven miles from the Forest of Wyre. This district was a centre of industrial activity at the commencement of the nineteenth century. The present company commenced operations here in 1872, and Mr. Gibbs, to whom we are indebted for much of this information, gives it as his opinion that this coal is not the same as that worked at Highley, the accompanying strata both above and below being very different, and adds that there are two beds of excellent fire-clay which are said to be equal to any in the Stourbridge district, and also a bed of iron ore supposed to be representative of the Gubbin ironstone of South Staffordshire.

From early times the lords of Benthall, near Broseley, worked the mines on their own estates by licence from the priors of Wenlock.[9]

In an old work in the Deer Leap, near Benthall, wooden shovels and flanged wooden wheels, cut out of the solid block and apparently designed to bear heavy weights, together with an iron axle-tree, with some brass sockets bearing the initials P.B. were found some years ago, and are in the possession of T. H. Thursfield, esq., of Much Wenlock, formerly of Barrow, then agent to Lord Forester, who purchased the Benthall estate and added it to that of Willey.

In 1326 Adam Peyeson of Buildwas acknowledged that he held of Hugh, lord of Scheynton, certain land at Benthall, paying yearly three marks of silver and a quarter of beans of small measure ; with all the quarries of coal of the sea called 'Secoles,' together with four labourers to dig the sea coals, and with as many servants as he chose for carrying the coals to Severn, and thence leading them away ; the said Hugh to have coal sufficient for his hearth (*focum*) at Benthall from the quarry of the said Adam.[10]

The collieries appear to have been so fully developed about the year 1645 as to have been the source of an important supply of coal to Bridgnorth, Worcester, and other towns along the course of the Severn.[11] The proprietor at that time was Lawrence Benthall, who was one of the commissioners appointed to raise funds for Prince Rupert's forces, which seems to have drawn down upon him the displeasure of the Parliamentarians, who took possession, planted a garrison there, cut down the wheat, destroyed the barns and stables, and imposed a sequestration fine of £290.

The Parliamentary account, under date of 10 December, is as follows :—

> By letters out of Shropshire, we have this day had a full relation of the affairs (as they stand) between our forces and the enemy. Since my last, we have planted a garrison at Bentall, to prevent the enemy from gathering contributions in their country, and to stop coals from coming thither, and to Worcester, for at this place the coles that supplied those places are digged. This garrison doth much annoy the enemy, and at our first coming to fortify here, the enemy sent fourth severall parties from Worcester, Ludlow and Bridgnorth, who joyned together with intent to frustrate our design here, and to that end made an attempt against us in the night, or about break of day in the morning, but were so gallantly received, that it is conceived they will not be hasty to come again, for we slew divers of them, and after about an hour's fight forced them to retire to Bridgnorth, from whence they came ; in which Captain Kettleby deserved much commendation. After this they threatened to put all our men to the sword, that they take carrying cole up Severn to Shrewsbury (which sometimes are endangered by the Enemies' garrison at High Archell), but at the last, Sir Lewis Kirke, Governor of Bridgnorth, sent a drummer to this effect, viz. : — That if we would permit, and suffer a free trade of coles to come to Bridgnorth from Worcester they would not interrupt our passage to Shrewsbury ; unto which message answer was sent to this effect :—That if they would pay the country for those they had already received, and would give us free passage with the cole down Severn by Worcester, to Gloucester and Teuxbury, they should have coles hereafter at the rates as formerly ; but what further effect this treaty will have as yet we know not.[11a]

A diary or extract journal of both houses, of December, 1645, says :—

> We hear it confirmed by advised letters that Worcester, Bridgnorth, Ludlow, and High Archell, are in great distress this winter season for want of coles, the Shrewsbury forces having seized upon the Coleries at Benthall, and about Sturbridge, and planted two strong garrisons not farre from High Archell, to secure the country from the invasion of the enemies.[12]

From Benthall the seams of coal are continuous through Broseley, where they lie so near the surface in places that the inhabitants not unfrequently meet with it in their gardens and cellars, and here on the upper side of the Broseley fault

[9] Dugdale, *Monasticon*, v, 360, No. 22 ; Eyton, *Antiq. Shrops.* iii, 276.

[10] Owen and Blakeway, *Hist. of Shrewsbury*, i, 347.

[11] In an account of Bridgnorth, written in 1739, 'the most common freight upon the Severn,' says the writer, 'is pit coal from Broseley, very famous for its collieries.' *Shrops. Arch. Soc. Trans.* ix, 197.

[11a] *Weekly Account*, 10 Dec. 1645.

[12] The above facts were placed at the disposal of the writer by Francis Benthall, esq., barrister of the Inner Temple, a descendant of one of the younger branches of the family of Benthall of Benthall.

their depth seldom exceeds twenty yards; terminating abruptly, however, near the old lodge entrance to Willey Park.

Oakengates,[13] or 'Open-hates,' or 'Oaken-yates' (the sound of the 'g' in the original pronunciation being softened into 'y') was connected with mining operations at a very early period.[14] The Romans apparently drove levels and obtained coal for the hypocaust found here[15] in February, 1797. They also appear to have carried the same fuel, by the great Watling Street road, to use in the hypocaust which is still to be seen among the ruins of Uriconium. As strong evidence of the early working of these mines, it may be mentioned on the authority of some old and intelligent miners, that very primitive implements, such as wicker baskets, wooden shovels cased in iron, and rush-wicked candles have been found in old levels. It appears also that the Augustinian canons of Wombridge Priory understood the value of the minerals in the ground beneath them, and turned them to account, as evidenced by the quaint levels and little temporary shafts, as though to test the mines, which were probably made while the land was in their possession.

It appears that an iron forge existed here at a very early period, and probably a blast furnace close to the old mill, for we find it alluded to in the declaration made by William, last prior of Wombridge, before the king's commissioners, of the receipts of the priory in the twenty-seventh year of Henry VIII, 1535–6, and subsequently the 'ferm' of a coal mine at Wombridge is mentioned as being of the value of £5. The possession of the mines here proved a source of great revenue to the Charlton family, who received royalty for the mines upon the following scale :—

| | | | | *d.* |
|---|---|---|---|---|
| Coals and lumps | per ton of | 2,520 | lb. weight | 9 |
| Sulphur coal | ,, | ,, | ,, | 8 |
| Fine Slack | ,, | ,, | ,, | 3 |
| Ironstone | ,, | ,, | ,, | 9½ |
| Limestone | ,, | ,, | ,, | 6 |
| Sand | ,, | ,, | ,, | 6 |
| Surface clay | ,, | ,, | ,, | 6 |
| Other clay | ,, | ,, | ,, | 8 |
| Bricks or tiles | ,, | 1,000 | ,, | 1*s.* |

In modern times, Mr. James Foster, having made himself acquainted with the excellent qualities of the iron ores of the district, erected iron works here in 1818. On the engine-house is the date 1819. The engine was a very highly finished one, got up at Mr. Foster's Stourbridge works. Part of it was polished like steel, and the other parts were painted green and gold. Mr. Foster took great pride in it and generally gave the engine-man half a guinea when he came over, to keep it bright. It was a Bolton and Watt engine, with a hollow stalk nozzle, but was altered to a chest one, with equilibrium valves. It blew three furnaces, but was capable of blowing six. The forge of the Wombridge Iron Company, Limited, of which Mr. Jacob Butler was manager, was built by Mr. John Bennet in 1854, from designs and plans carried out by Mr. John Peplow, on the site of the old works. It was a compact little work, with good machinery, and railway sidings running into the yard on either side. The stack was 150 ft., 10 ft. diameter inside at the top, and 16 ft. outside, with a capping 40 tons weight. The engine was 80 horse power, high pressure and exhaustive. It worked the hammer and rolls. The puddling furnaces got the steam, with the exception of one boiler which was heated with slack. The speed of the flywheel was 950 revolutions per minute. There was also a patent shears by Craig and Donald, for cutting off steel rails cold, and a pair of vertical engines for working rolls.

A very fine Cornish engine of 250 horse power, with a 10 ft. stroke of the cylinder, and a 9 ft. stroke of pump, was erected in 1858 to drain 2,000 acres of these mines, by lifting 3,388 gallons per minute with three strokes, though it was capable of working eleven strokes in the same time. It took eighteen months to reduce the water down to the clod coal. This engine drained the Ketley field in addition to that of Wombridge, but owing to a dispute between the parties as to the expenses of keeping it going it ceased working, both fields consequently becoming flooded. Mr. Foster continued to keep his Wombridge furnaces in blast until 1843, when he removed his plant to Madeley Court, at which place he began to make pig-iron in 1847.

Madeley Court estate was purchased about the year 1837, and about 1840 he began to work the colliery, sinking in all sixteen pit-shafts for raising coal and ironstone for supplying the furnaces.

In the old deeds relating to Madeley Court it is stated that the proprietor and lord of the manor, Basil Brooke, tried, ineffectually, to work the coal mines, about 150 years ago, going to much expense in sinking, probably in that part of the estate adjoining Lightmoor. It was on this plea, of losing money in coal-mining, that he was allowed by a special Act of Parliament to sell the manorial rights in the parish of Madeley; and also the Madeley Court estate, the coal mines under the same being reserved for a certain distance around the old manor-house called Madeley Court.

Mr. James Foster, seeing the great advantage gained by blending different kinds of ironstone to produce first-class pig-iron at the Calcutts, near Broseley, took up the lease granted by Sir

[13] Hartshorne, *Salopia Antiqua*, 620.

[14] 'Okengate, famous at present for coalpits.' Add. MSS. 30327, fol. 90.

[15] *Gent. Mag.* Feb. 1797.

Onesiphorous Paul to George Matthews of Broseley for ninety-nine years (1767–1866), and for some time produced pig-iron there, subsequently taking the ironstone to his Staffordshire furnaces. Mr. Foster also had works below Bridgnorth, at Eardington, and Hampton Loade, where he made charcoal iron of the finest quality, sending it to be finished at his Stourbridge iron works. When making his best bar iron he was in the habit of using not less than five different kinds of pig-iron, his favourite brands being Hadley, Wombridge, Madeley Wood, Lilleshall, Madeley Court, Priestfield, and Blaenavon, all these being best pigs, and when mixed together making a bar that could not be surpassed.

All his pig-iron was formerly conveyed down the Severn to Stourport, and from thence by canal and rail to his different works, his locomotive running from Green's Forge to Shut End being the second locomotive made in the country. It was constructed by the engineer Trevithick, and has been presented by Mr. Foster to the South Kensington Museum, where it now stands, a worthy monument of early engineering skill. Always desirous of eliminating all impurities from his pig-iron, Mr. Foster at one time ran all his iron into cast-iron chills, coated with a smearing of fire-clay, to prevent silicon being conveyed into the iron through moulding in sand. At another time he ran all his iron into a large water-tank, making a strange hubbub when the hot iron ran into the cold water, which broke it all up into small fragments. He also regularly refined much of his cast iron in the old-fashioned refinery.

At his death he was succeeded by his nephew, William Orme Foster, who inherited his various estates and great wealth, and purchased the Apley Park estate, where he resided until his death in 1899. He was succeeded by his son Henry Foster, formerly M.P. for the borough of Bridgnorth. Mr. Charles Worth Pearce is now manager of the Shropshire works.

Between Kemberton on the one side, and Donnington Wood, near Lilleshall, on the other, a fair quantity of coal is still worked. The largest owner of mines is the Lilleshall Company, Limited. This company, which has been in existence for about ninety years, was originally styled 'The Lilleshall Co.,' and consisted of twelve partners, of whom Earl Granville was chief. One of the earliest well-known managing partners was Mr. John Horton, who was succeeded by his son Mr. T. E. Horton, with Mr. Edward Jones as mining engineer. In 1875 Mr. John Lloyd, the company's chief engineer, became general manager, which position he held until 1882, when he was followed by Mr. W. Perrott, who is still successfully conducting the operations of the firm. The company continued as a partnership company until 1880, when it became 'limited,' with the late Earl Granville as sole director. In 1890 a board of directors was formed.

The earlier operations of the company lay chiefly in Donnington Wood, where there was not only a large number of pits raising coal and ironstone, but several blast furnaces, besides a foundry, &c. After a time pits were sunk in the village of Priors Lee,[16] and also at Wrockwardine Wood, so that the coalfield at the present time worked by the firm cannot be less than 3 miles long.

Of course, during such a long period as ninety years it is only natural that great changes should take place. Small pits, such as were usual in the early portion of last century, were gradually abandoned and large shafts sunk, these shafts being of a depth of 300 to 400 yards, so that the lower measures might be gotten. The principal pits now are the 'Granville,' 'Grange,' 'Muxton Bridge,' and 'Freehold' in Donnington Wood, and the 'Woodhouse' and 'Stafford' at Priors Lee.

The winning of coal and ironstone in this district is by no means an easy matter, as the seams are greatly intersected by numerous 'faults,' the chief of which are well known to local geologists, viz. the 'Great East' and 'Lightmoor.' None of the seams can be described as 'fiery,' but as a certain amount of gas is found from time to time safety lamps are used. No great accidents have afflicted the district during the past century like those that have occurred in Yorkshire, Lancashire, and South Wales, though on one occasion about twelve men lost their lives from 'after damp,' and on another a seam had to be abandoned on account of fire breaking out.

The company have gradually increased their output, so that the quantity of coal now raised is over 400,000 tons per year. The number of hands employed in and about the pits is about 1,500, and a like number are employed in other departments, making a total of 3,000, the sum of weekly wages being from £3,000 to £4,000. The upper measures, viz. 'Fungus,' 'Top,' and 'Deep' coals are excellent house qualities; while the seams below, viz. 'Double,' 'Flints,' and 'Clod,' are recognized as good and valuable works coals. At one time the 'Fungus' was looked upon as the best house coal on the London market.

The great boundary fault runs through Hadley almost parallel with the London and North Western Railway from Wellington to Newport, and against it the Coal Measures terminate abruptly. It is one of those eruptive upthrusts of igneous matter such as has been described as occurring at the Clee Hills, and again and again at

[16] The maximum depth attained by 1841 in the Shropshire coalfield was 900 ft. at Priors Lee Colliery; Smith, *Miner's Guide*, 115.

Wrockwardine Wood, New-dale, Horsehay, Little Wenlock, and other places. Colliers who are accustomed to these faults say the coals slope upwards to a rise or dip to a swamp where the edges of the coal come in contact with the fault: that is, if the edges of the coal are bent downwards they may expect to meet with them at a greater depth, but if they turn upwards they may expect to meet with them at a higher level. But here they have been found neither below nor above. Mr. George Thorneycroft, an iron master of Wolverhampton, bought Hadley Hall and demesne, consisting of 325 acres, fully expecting to find a continuation of the Coal Measures on that estate. He bored on the northern side of the house to a depth of 120 yards, when they came to igneous rock, through which they bored 12 yards at a cost of five or six hundred pounds, and then gave it up. South of the house they bored 60 yards, and came to the same rock, but went into it six or seven feet. On the same side of the house, on the Wellington side of the estate, they came to the same rock at 40 yards.

Subsequently to this (in 1872) the present writer superintended a boring at the Trench, in a part of the Preston Hospital estate, on a farm in the occupation of Mr. James Johnson, for some local gentlemen who proposed to lease that portion of the charity property held by trustees. The only grounds for hope that coal would be found were certain indications which Mr. Jones, of Granville Lodge, then mining engineer to the Lilleshall Company, had found at points where they had worked up to the boundary, and a statement, said to be well authenticated, that coal was seen in the sides of a well sunk on Mr. Johnson's farm. In these circumstances it was thought just possible that a trough of Coal Measures might have been left between two faults; but if so, the boring was too far north.

Inside the fault on the New Hadley side, the whole of the Coal Measures of the district come in as follows:—

| | ft. | in. |
|---|---|---|
| Fungus coal | 3 | 0 |
| Foot coal | 1 | 0 |
| Clod and gur coal | 2 | 0 |
| Top coal | 4 | 6 |
| Double coal | 3 | 0 |
| Double coal bottoms | 1 | 6 |
| Yard coal and bass | 3 | 6 |
| Flint coal | 5 | 0 |
| Sulphur coal | 7 | 0 |
| Coal, bass, and coal | 5 | 0 |
| Two-feet coal | 2 | 6 |
| Clod coal | 3 | 0 |
| Little flint coal | 1 | 6 |

This is 42 ft. 6 in. of coal altogether, besides nearly 40 ft. of ironstone measures of high quality.

The Ketley Coal Works were, at the beginning of the nineteenth century, among the most important of the coal-getting industries of the district. They were situated near Wellington, close to the old Roman road of Watling Street, leading to Uriconium, Chester, and Holyhead. Unlike most of the fields already noticed, which rest upon Devonian or Old Red Sandstone and Silurian Limestone, the Ketley field lies on an attenuated fringe of carboniferous limestone, extending from Lilleshall Hill to the Ercall, but speedily disappearing to the south. Like those of the Clee Hills and Kinlet, the Coal Measures here have been much penetrated by trap, causing powerful faults, the lower coal having been thrown up nearly to the surface in the centre of the field, and quite so at its western extremity.

Richard Reynolds, then a young man, became a partner in these works in 1757. He retired for a time, as we shall see, to Coalbrookdale, to manage the works there during the minority of his brothers-in-law, and returned to Ketley in 1768.

Mr. Reynolds took great interest in the improvements in the steam engine effected by Watt and others, and two years after the erection of the one at Wilkinson's works at Willey, gave a great impulse to the iron trade by its introduction at Ketley.

The works had now attained great prosperity and an importance which attracted the attention of the government, and Lord Thurlow, then Lord Chancellor, paid them a visit, the result being orders from the government for cannon, which Mr. Reynolds, as a Quaker, refused on conscientious grounds. The extent to which the works at Ketley and Donnington afforded employment for the population of the district may be best realized by the consideration of the remonstrance he addressed to Earl Gower, when Pitt proposed to levy a tax of 2*s.* upon every ton of coal raised to the pit's mouth.

He says:—

> The advancement of the iron trade within these few years has been prodigious; it was thought, and justly, that the making of pig iron with pit coal was a great acquisition to the nation by saving the woods and supplying a material to manufactories, the make of which by the consumption of all the wood the country produced, was unequal to the demand; and the nail trade, perhaps the most considerable of any one article of manufactured iron, would have been lost to this country, had it not been found practicable to make nails of iron made with pit coal; and it is for that purpose we have made, or rather are making, the alterations at Donnington Wood, Ketley, &c., which we expect to complete in the present year, but not at a less expense than £20,000, which will be lost to us and gained by nobody if this tax is laid on our coals. The only chance we have of making iron as cheap as it can be imported from Russia, is the low price of our fuel, and unless we can do that there will not be consumption equal to half the quantity that can be made, and when we consider how many people are employed on a ton of iron, and the several trades dependent thereupon, we shall be convinced the Revenue is much more benefited even

by the consumption of exciseable articles, &c., than by the duty on a ton of foreign iron; nor will it, I believe, escape observation that the iron trade, so fatally affected by this absurd tax, is only of the second, if indeed, on some account, it is not of the first importance to the nation. The preference I know is given, and I believe justly, as to the number of hands employed, to the woollen manufactory; but when it is remembered that all that is produced by making of iron with pit coal is absolutely so much gained to the nation, and which, without its being so applied, would be perfectly useless, it will evince its superior importance, for the land grazed by sheep might be converted with whatever loss to other purposes of agriculture or pasturage; but coal and iron stone have no value in their natural state, produce nothing until they are consumed or manufactured and a tax upon coal, which, as I said, is the only article that in any degree compensates for our high price of labour &c, or can be substituted in the stead of water for our wheels and bellows, would entirely ruin this very populous county, and throw its numerous labouring poor upon the parishes, till the emigration of those of them who are able to work shall strengthen our opponents, and leave the desolated wastes, at present occupied by their cottages, to the lords of the soil.

Adjoining the Madeley Court Works are those of the Madeley Wood Company. It seems probable that for five hundred years coal has been gotten out of the sides of the hills at Madeley Wood, either for household purposes, for use in local forges, or for export by the River Severn, or both. In 1390 the rents of Madeley included a ferm of coals (probably that granted by the prior of Wenlock to Walter de Caldbrook in 1322 for 6*s*.).[17] In 1698 the iron, coal, and lime works are returned as producing £55 14*s*. of the assessment, and in 1704 they contributed £84 to the same.

Old levels are numerous along the hillsides where coal crops out, and wooden shovels, wooden rails, and other primitive implements have been found in them. Some of the shafts sunk by Mr. Reynolds came down upon old workings for smiths' or furnace coal, as at the Lodge Pit, where the shaft, after passing through five yards of sand, six of brick and tile clays, thirteen of rough rock, and thirteen of other measures, came upon the Pennystone. All the measures usually found in other parts of the field were absent. The sulphur coal which underlies the Pennystone was present, as was the Vigar coal, the two-foot coal, the Ganey coal, the best coal and the middle coal, but instead of the clod-coal they found the 'Gob' (the refuse thrown into the space from which the coal had been removed by some early miners). In less than a hundred yards from this shaft all these coals disappear against the limestone rocks of Lincoln Hill, which in other parts of the field are 300 or more yards from the surface. At Rowton mines, which are a southern extension of the Broseley field, the coals mentioned in one of the agreements as having been worked were the 'top coal, the flint-coal, and others lying further down.' It was stated that the object of the company was to—

> Sink pits, drive levels, lay down way-boards, make railroads, and convey coal, ironstone and limestone from Rowton to Gitchfield meadow to trows and barges on the Severn, paying, in addition to the royalty to the owners, 3*d*. for every usual ton of coal or ironstone; also to carry from the Severn hay, corn, wool, etc. for the use of the works.

A number of agreements were entered into as to getting the mines, winding water, keeping rails in repair, etc. Mutual distrusts and disagreements arose between members of the company, which gave rise to litigation that extended over a number of years and found work for the Court of Chancery; the number of deeds and writings produced at the several hearings amounting altogether to forty.

Among the petitions to the Court of Chancery was one presented in 1718 by the widow of Lancelot Taylor, one of the company, who complained of encroachments made by Michael Stephens and Michael Harrison (master collier), and of the refusal of Richard Manning to pay his share of the cost of the works, which it was said was £1,000 and upwards. Another was presented by Richard Manning, who alleged that contrary to agreement—

> Nicholas Addenbrooke and Richard Edwards, without your orator's priority or conjoint, did make a fraudulent and clandestine agreement with one Michael Stephens, Gent., who had before that time sunk one or more pits in the land of one Mr. Bromley and one Mr. Langley for getting coals in their land, that the said Stephens should have the liberty to get the said coals in Rowton farm, which said liberty was granted to your orator by agreement.

The petition further alleged that Michael Stephens had by means of Langley's pit, sunk in Bromley's ground, got several thousand tons of coal under Rowton Farm, which the orator might have gotten, and had carried the said coals to the Severn, through Bromley's lands, instead of through the orator's lands, according to agreement. He further complained that—

> By getting the flint cole, it had shaken, broken, or loosened another vein of cole, which lieth above the said flint cole, commonly called the clod, middle or soft coles, being about two yards thick, so that it can never be gotten hereafter with profit.

These disagreements between the parties so multiplied that the life was crushed out of the undertaking, which was ultimately abandoned. Two of the shafts mentioned in the above documents are still known as the Langley pits, and were cleansed in 1825, with the view to their being re-worked by Messrs. Thomas Rose, of

[17] Eyton, *Antiq. Shrops.* iii, 321.

Swinney, and J. Onions, of Broseley, but finding the quantity of water contained therein beyond the scope of their appliances, a level was driven from Gitchfield with the intention of drawing off the water, though never carried to a successful conclusion; a portion of the minerals are therefore believed to still remain ungotten.

Among the assets of the priory of Wenlock, in the year 1541–2, is a mine of ironstone at Shirlett, fermed for £2 6*s.* 1*d.* per annum; and a forge described as an 'ierne smythee,' or a smith's place, in Shirlett, rented at £12 8*s.* Another forge produced £2 13*s.* 4*d.* per annum; and the produce of some other mineral, probably coal, was £5 3*s.* 10*d.*[18] It is clear from this that the coal and iron industries have been carried on here from a very early period, how early it is impossible to say. Later on in the division of the disafforested and the waste lands of Shirlett frequent reference is made to coal-mining and iron-making[19] in articles of agreement, the original of which we were privileged to inspect between—

Walter Acton, Esquier, Chiefe Lord of the Soile of the Comons and waste grounde called or knowne by the names of King's Haye and Earles Wood, in Sherlott, and John Weld, Esquier, Chiefe Lord of the Soile of the Comons and waste grounde called or known by the names of Willey Held and the Prior's Wood in Sherlott,

Charles Baldwyn, gent., and others. It provided that if the chief lord should at any time 'digge for Coles, Ironstone, Mynes, Slate of quaares,' he should construct convenient roads, gateways, &c., for the convenience of the freeholders and 'Comoners.' It further provided that the 'Chief Lordes of the Soile' should have—

Sole libertie to digge for all Coles, Ironstone, Mynes, Slate and Quarries, and to take, sell and convert them or any of them to theire oune use, with free ingresse, egresse and regresse with men-servants, cartes, and carriages at theire will and pleasure. And also at all tymes hereafter as occasion shall require to have convenient places to lay the said Coles, Ironstone, Mynes, Slate and Quarres in . . . and doe all things necessarie for the working of thet same and to have convenient ways and passages as they lawfullie might have done before this Agreement.

It was also agreed that the—

Chiefe Lordes respectively shall repaire such wayes as they spoile by means of theire particular carriages of Coles, wood, &c., and shall fill up such pitte as they shall digge hereafter so as the Comoner's Cattle may not be in danger, so soone as they have done workinge such pitte.

[18] Dugdale, *Mon.* v, 80–1.

[19] The rent of a mediaeval iron mill in Wombridge yielded 13*s.* 4*d.* to the priory of Wombridge; *Valor Eccl.* (Rec. Com.), iii, 194.

The rent of 'the house and inclosure by the Colepitte wherein Porter now dwelleth' was fixed at an annual rent of twelve pence during 'the contynuance of the work at that place,' and that if—

The Coleworks be removed to any other parte hereafter that then the like proportion of ground that Porter now hath shall be allotted to build upon for his Coleworkmen at the like rent during the contynuance only of the Coleworks in such place.

The deed bears the signature of fifty-two persons, who 'sette theire handes and seales thereto in the fifth yeare of the raigne of our Sovereign Lorde Charles, 1625.'

Sir John Weld, who had purchased the estate from the Lacons of Kinlet, much improved it. He developed the mineral wealth—the clay, iron, stone, and coal; he sank pits and built furnaces, and being within a short distance of the great highway of the River Severn he disposed of his produce with ease. He also sank three pits upon his property at Chelmarsh; but he does not appear to have been successful in all his mining operations, for we find him, when taken a prisoner with other Loyalists at Shrewsbury, giving this advice to his son—not to be busy in searching for coals, nor in iron-works, not to be led away by colliers or miners, 'or projectors whose fair speech is but to get themselves money.'

The Charles Baldwyn mentioned in the agreement between John Weld and Walter Acton was apparently one of the family of Baldwin which was of old settlement and much importance in Corvedale.

Much interesting information is available as to the methods of coal-mining at Halesowen in the reign of James I. A workman 'appointed to digg a sawepytt' in the copyhold lands of one Lydd within the manor of Halesowen said that 'as he dug the sawepytt he found a shelve or bed of coles there.' Lydd, on being told of this, ordered the pit to be filled up again, saying that if Sir John Lyttelton, lord of the manor, knew thereof, he would dig there for the said coles. Customary tenants of the manor, it was thought, ought not to sink pits for coal or ironstone without licence of the lord of the manor. It appeared, however, that a profitable traffic in coals was actually being carried on at Halesowen by one John Low, who sold coals by the horse-load, and was alleged to be making a profit of 40*s.* a week. Other customary tenants had also dug for coals and sold them without contradiction. Copyholders of inheritance, however, might dig coal mines without licence of the lord of the manor; William Turton, the younger, for instance, a copyholder of inheritance within the manor of 'Oldeberrye, did get coals in his said copyhold, as did also one Humphrey Whyte in his copyhold of Halesowen, and Roger Muck-

lowe in one close, leasowe part of his copyhold lands near Combes Wood.' Coal was also found at Oldburne, parcel of the manor of Halesowen, where one William Tuncky (?), a customary tenant, while sinking a draught well of great depth was desired by one Robert Robserte, son of the lord of the manor, to sink the well deeper to see if there were any coals to be found. Other tenants at the same place had dug and found coals.[20]

Thomas Routh owned iron and coal mines in his manors or lopps of Shuttnoll, Sutton Maddock, Copham, Culmington, Wrockwardine, Cheswardine, and Tasley, in the reign of Charles I, Thomas Booth being bailiff, clerk, and collector of the rents and profits of the said several manors, coal mines, and iron works.

There was yearly spent at these works 500 cords of wood; every cord of wood in Lizard worth 3*s.* 2*d.* the cord, and every cord in Sutton 2*s.* 4*d.*[21]; Booth's profits were not known.

Iron was sold 'upon trust' by Booth to Ralph Buckeridge and others, at his forge at Lizard, Booth taking a bill of the said Ralph for the payment of £20.[22]

## IRONWORKS

Authentic records clearly demonstrate the early activities of Coalbrookdale. In 1322 Walter de Caldebrook, for a fine of 6*s.* paid to Wenlock Priory, was licensed to dig for sea-coal[1] in the brook holes (Le Brocholes).[2] In a deed dated 23 July, 1544, mention is made of Smithy Place and Caldebrooke Smithy, 'where iron was made in blooms.'[3]

There were two furnaces at Coalbrookdale on the Madeley estate of Sir Basil Brooke in the seventeenth century. Carlyle, in referring to Major Berry and the battle of Preston in 1648, states that Berry was once 'a Clerk in the Shropshire Iron Works,' but his name is not recognized locally so far as is known. There is extant a deposition dated 2 August, 1650, made by 'Mr. Francis Woolfe, Clarke to all ye works of Madeley,' respecting the accuracy of accounts connected with expenditure 'in preparation to get Coales' in the manor of Madeley. In 1685 Thomas Burton of Longnor, and again in 1698, his trustees granted certain leases in which covenants were inserted that the tenants of the farms should undertake to carry fixed quantities of ironstone annually to the furnaces at Leighton and Coalbrookdale. Sir Basil's successor, Basil Brooke esq., made attempts at development of the mines, which induced him in 1695 to obtain an Act of Parliament to enable him to set aside his existing settlement and to vest his estate in trustees in order to provide means 'for the better managing and improving of the estate and the better managing and carrying on of the said Cole Works and Iron Works.'[4] Whether or not Mr. Francis Woolfe, who gave shelter to King Charles after the battle of Worcester, was at any time the tenant of the works at Coalbrookdale is nor clear, though tradition supports the view, but the trustees granted a lease of them in 1696 to Shadrach Fox, who did not carry them on for more than half the term, when he assigned the lease to William Corfield of Pitchford, and Thomas Corfield of Leintwardine, who were masters of forges probably at both places. The works were described as all those 'severall Iron Works Forges and Furnaces sittuate in Coalebrookedale aforesaid with all pooles dams streams stankes wears &c., &c.' The lease did not include any mineral rights either for coal or ironstone.

Up to this period the smelting of the ore in the furnaces had been done with charcoal as the fuel, but the change to the use of mineral coal was about to take place, and though some of the existing furnaces continued to work with charcoal for several years longer, all furnaces subsequently built were worked with coked coal. The proprietors of the furnaces chiefly disposed of their pig-iron either to the owners of forges which were settled at several places where water power, as well as charcoal was abundant, as at Pitchford, Upton, Sambrook, or Caynton, or to merchants at Stourbridge or Bristol. There was no foundry making and selling; general details of cast-iron and such castings of the time as remain are chiefly 'Backs' for fires of wood or large tomb plates with inscriptions. But with the settlement of Abraham Darby at Coalbrookdale early in the eighteenth century the great expansion of the coal and iron industries commenced.

Abraham Darby was born in 1676 at Sedgeley, near Dudley, where his parents and grandparents had resided. Several of their social

[20] Exch. Dep. by Com. Hil. No. 17, 5 Jas. I (1607).

[21] In 1640, the consumption of wood by the iron-smelting furnaces on Dowles Brook, especially at 'Furnace Mill,' wood being used at that time instead of coal, caused all the large trees in Wyre Forest to be cut down. *Shrops. Arch. Soc. Trans.* i, 286.

[22] Exch. Dep. by Com. Mich. 5 Chas. I, No. 30.

[1] Eyton, *Antiq. Shrops.* iii, 321. Galloway, *Annals of Coal Mining*, 61.

[2] A man was allowed to be employed for one year at the work, the output being limited to the quantity which one person could bring to the surface. Eyton, op. cit.

[3] *Salopian Mag.* i, 16.

[4] No. 4 (Private Acts), 7–9 Will. III, 1695.

acquaintances were engaged in trades connected with iron, then numerous in the surrounding district, under the designation of naylors, locksmiths, ironmongers, and smiths, designations which had a wider meaning than in later times. His grandfather and father are described as locksmiths, and himself, when he had entered into business, as an ironmonger. He was apprenticed to Jonathan Freeth of Birmingham, a maker of small machines and mills for grinding malt. After his marriage in 1699 he settled in Bristol, where in partnership with three or four friends a brass works and foundry were commenced at Baptist Mills. He was induced to make a visit to Holland in furtherance of this business, and there he engaged some Dutch workmen to return with him. He afterwards was desirous to make cast-iron articles chiefly for domestic use, and he endeavoured to produce some of these articles by new methods and the skill of the Dutchmen. Their efforts were unsuccessful, but the points of failure had been noticed, and were remedied by a young assistant named John Thomas, from Montgomeryshire, who had been recommended to him by Charles Lloyd, of Dolobran.

Abraham Darby obtained a patent in 1708 for this

> new way of casting iron bellied potts and other iron bellied ware in sand only, by which such articles could be cast better and more easily and be afforded cheaper than could be by the way commonly used.

He had been admitted a freeman of the city of Bristol in 1707 without payment of a fine, by the favour of the mayor. He had decided to extend the iron foundry, and a separation of the partnership was made in consequence, upon which he removed from the works at Baptist Mills to premises in Cheese Lane, but he had also had under consideration the removal of the foundry to the source of the supply of materials. However it may have been brought about, he made the acquaintance of the Corfields, and arranging with them for the tenancy during the unexpired part of the leasehold term, he entered into occupation of the premises at Coalbrookdale. In the course of 1708 and 1709 he repaired and got to work one of the furnaces; had brought up foundry utensils and patterns and some workmen from Bristol, and had engaged other workmen from Worcestershire. A deed of partnership with James Peters of Bristol, and Griffin Prankard of Somerton, dated in February, 1709, relates to the carrying on of the business both in Bristol and at Coalbrookdale. Later on, when Abraham Darby had removed his residence into Shropshire, this partnership was dissolved, and the premises in Cheese Lane were disposed of. Thomas Goldney, an influential merchant, then entered into business relations with him. The works at Coalbrookdale evidently became fairly successful within a short time. Workmen were increased, and a second furnace was got to work. The precise conditions under which Abraham Darby successfully coked the coal and worked the furnace with the coke are not now known; but it has been the united contemporary statement and subsequent tradition that this was entirely accomplished by him.[5] The coal was supplied from the parish of Little Wenlock, and some ironstone from near Ketley, by a master collier or contractor, Richard Hartshorne, a lessee from Lord Gower, and residing near there, and other ironstone was brought from the parish of Benthall. The furnace and the bellows or blowing machine, worked by water power, were extremely small, and consequently the production of iron also. The castings were for a time uniformly made direct from the furnace.

A journey to Bristol and London with the anxieties of business in 1716 produced serious illness which resulted in his decease in May, 1717. He left several children, but his eldest son, Abraham,[6] was barely six years old. It was necessary immediately to lessen responsibilities, and to support the works and their business. For these objects Thomas Goldney and his son Thomas Goldney, jun., consented to unite with Mrs. Darby and Richard Ford in partnership, which passed under the designation of the Coalbrookdale, or the Dale Company.[7] Richard Ford had been engaged by Abraham Darby as clerk or assistant, and had acquired some acquaintance with the business and the conduct of the works, which apparently went on with little interruption. Thomas Goldney, jun., was associated with him at the works for a short period. Richard Ford married Mary, the eldest daughter of Abraham Darby, and they continuously resided at Coalbrookdale. The second daughter, Ann Darby, married John Hawkins of Wrexham, who subsequently became lessee of the furnace at Bersham, and of the colliery at Gardden, which had belonged to Charles Lloyd of Dolobran. It is probable that through this connexion the use of coke was adopted at Bersham in 1725 by Charles Lloyd, and continued by J. Hawkins. A brother-in-law, Thomas Harvey, had become associated with William Wood of Wolverhampton, an important forge master of the time, who, in 1723, contracted with the government for issuing the Irish copper coinage, and had taken from him the forges at Sutton and Upton near Shrewsbury, which he carried on with partners under the name of 'the Tern Company.'

[5] Abraham Darby was making iron with coke at Coalbrookdale in 1735. Kendall, *Iron Ores*, 32.

[6] Born 12 May, 1711, Exch. Dep. by Com. Hil. 27 Geo. II, No. 8.

[7] The partners in the Coalbrookdale Company in 1754 were Thomas Goldney, Francis Goldney, Abraham Darby, and Mary and Richard Ford; Exch. Dep. by Com. Hil. 27 Geo. II, No. 8.

The detailed inventory of 'the quick and dead stock' at Coalbrookdale, which was taken in July, 1718, shows that articles known as furnaces, pots, kettles, and skillets in great variety of size, and also mortars, 'smooth irons,' cart boxes, fire backs, bake stones, weights, and other articles, even 'garden rowles,' were then made. In the 'Coal yard' were a stock of brays, and some cords of wood, and a large quantity of turf, probably required for charcoal burning.

At the old blast furnace were '6 stacks of coaks'; at the new furnace were '18 stacks of coaks'; and there were also '15 stacks of coaks at ye coal hearths.' There was a considerable stock of ironstone, a small stock of pigs, valued at £8 10*s.* per ton, and a large, possibly an accumulated, quantity of 'Sculls,' valued at £2 per ton, evidence of deficient heat in working the furnace. The 'Sculls' were sold to a neighbouring forge master, Roger Holmes of Hadley, by whom they could be worked into wrought iron. In July the new furnace had been 'blown out,' and the old furnace was evidently about to be so; but the fuel charged in the accounts for their consumption was coal, and this was coked. The accounts continuously show the details of the quantities of coal conveyed, supplied, and coked month by month for the furnaces. There were in the foundry three 'Air Furnaces,' but the greater part of the castings were not made with re-melted iron. Some pig-iron was sold through Thomas Goldney, principally to merchants in Bristol. There was a certain commercial prejudice against it as not being made with charcoal.

The Great or Middle Forge in Coalbrookdale had been worked by Captain Thomas Stanley as tenant. In 1720 the tenancy was relinquished to the company. The workmen were disinclined to work the 'Pit Coal' pig-iron, and apparently they were paid a higher rate for doing so. For some years charcoal pig-iron was purchased for making into wrought iron; and charcoal, as at all forges for many years afterwards, was the only fuel.

The Upper Forge was occupied by Cornelius Hallen, whose ancestor had emigrated from Holland and had settled at Stourbridge. His branch of business was making frying pans and similar articles, spades, and shovels.

The earliest 'Fire Engine' work was supplied to Stanier Parrott, esq., of Coventry and Bedworth, in 1718, and in 1724 'a Cillinder, Bottom, Pistern, and Pipes, weighing 74 cwt. 1 qr. 11 lb.,' were delivered for him. In 1724 'a Cillinder' had been sent to Swannington, and 'a Cillinder, a Bottom, Pistern, Brass Pipes, and Wrought Iron Pins, about 30 cwt.' had been taken 'to Harding near Chester,' where others were sent in 1726 and 1727.

Sir Richard Newdigate had a 'Cillender, Bottom, Pistern, and 3 Pitt Barrells (Pump pipes), cwt. 51, 3, 25'; William Jordan & Co., of Hampton, 'Pipe bored, cwt. 8, and Pipes unbored, cwt. 16, 3, 25' in 1725. Similar articles were supplied to Sir George Beaumont, Lord Middleton, George Sparrow of Darlaston, in 1727; Sampson Lloyd & Co., in 1730; Joseph Hornblower, Birmingham; Alderman Ridley, Newcastle-on-Tyne; and Thomas Allan, esq., of Allan's Flats, in 1731; the earl of Scarborough, in 1733; Sir George Beaumont of Wyken, Joseph Hornblower, in 1734; Henry Lambton, esq., of Lambton in Durham, William Richardson, esq., Dudley, in 1735; Lord Middleton, Lord Dudley, Buslome Sparrow, in 1736. Anticipating an increased demand for pipes and fire-engine work, consequent on the expiration of the Newcomen patent, Richard Ford, in 1732, concluded an agreement with George Weld, esq., of Willey, for a lease (in succession to Richard Baldwin) of the furnace there to the Dale Company for twenty-one years; the lessor engaging 'to deliver at the Furnace such quantity of coles that shall be wanting for carrying on the work, but such as shall be approved of,' and also ironstone, at fixed rates. The furnace was not again worked exclusively with charcoal.

The second Abraham Darby, after he had attained his majority in 1732, became actively engaged in the works. He was desirous of increasing the make of the furnaces; and he induced the company to erect a large 'Fire Engine' by which the water that had passed over three or four water wheels could be returned into a large pond, and again be made available. This was a heavy matter, but it was accomplished in 1742–4. The result was the more regular and continuous working of the furnaces. The same arrangement was subsequently adopted at other iron works, among them being Carron in Scotland. An arrangement for increasing the quantity of air or blast was also introduced. A visit was made to Coalbrookdale in 1745 by the Rev. Mr. Mason, Woodwardian Professor at Cambridge, who reported to the Royal Society on two or three matters which he had observed. He became acquainted with the metal spelter, with which Richard Ford was experimenting, and which he had not previously seen. He then says:—

> Several attempts have been made to run iron ore with pit coal. I imagine it hath not succeeded anywhere because we have had no account of its being practised, but I find, Mr. Ford, from iron ore and coal, both gotten in the same Dale, makes iron brittle or tough as he pleases, there being cannon thus cast so soft as to bear turning like wrought iron.[8]

This statement, though not quite correct in facts, is testimony to the careful management and observation of the furnace during the period of

[8] Mason, *Phil. Trans.* No. 482, p. 382 (1747).

upwards of thirty years in which pit coal and coke had been used under Richard Ford's supervision.

Richard Ford died in August, 1745, leaving three sons who were connected with the works, but the direction of the Dale Company's affairs devolved upon Abraham Darby locally, and Thomas Goldney the younger in Bristol. The demand for pig iron and cast-iron articles continued steadily to increase, and Abraham Darby proceeded energetically to meet it. For many preceding years Richard Hartshorne of Ketley, master collier, had been accustomed to supply from Lord Gower's estate ironstone and coal for the Dale Furnaces. Now, in 1750, Abraham Darby concluded with John Earl Gower a lease of coal works in the manor of Ketley; and in 1758 further engagements for a term of ninety-nine years extending over Ketley, Donnington Wood, and Wrockwardine, and including powers for the erection of one or more blast furnaces with a fire engine, were made with Granville Earl Gower.

In 1753 similar leasehold engagements were entered into with Plowden Slaney, esq., of Hatton (which were renewed with his son Robert Slaney and his grandson Robert A. Slaney), with respect to the minerals in his manor of Dawley, and to the building of furnaces and works at Horsehay; and also in 1759 with Robert Burton, esq., of Longnor, with regard to his lands in Lawley and Dawley; and afterwards, in 1772, with Isaac Hawkins Browne, esq., with respect to Malinslee. Large pumping engines, having cylinders 10 ft. in length and 60 in. in diameter, were erected at Ketley and at Horsehay for the requirements of the works, and for the necessities of the collieries. The furnaces at Horsehay were got to work early in 1755, and the two furnaces placed near to the Watling Street Road at Ketley were completed in the next or following year. It was expected each furnace would make 25 tons of iron per week, and this in a short time was exceeded. The furnaces at Coalbrookdale were at this period chiefly supplied with coal from the estate of William Forester, esq., and Brooke Forester, esq., at Little Wenlock; from which also there was a considerable export sale on the Severn.

The transport of all the produce and material was a subject of pressing importance as the quantities increased. It had hitherto been made on the backs of horses, 3½ cwt. being the settled horse load, or in wagons carrying ten horse loads or 35 cwt. Arrangements were concluded with the landowners in 1749, 1750, and 1752 for the necessary land for a wagon way or railway, in order that

> Coals may be conveyed in the easiest and best manner, to make a wagon way and lay rails on sleepers in such manner as is commonly used, and with coal wagons and horses and oxen to draw the same on or along the said railway to Coalbrookdale.

The railway had been made as far as Horsehay by 1750, and in 1757 it was extended thence to the new furnaces at Ketley, so that there was a continuous railway from Ketley to the Severn, a distance of 5 miles. The rails were of wood, 3½ in. by 4½ in., fixed on sleepers of wood laid transversely. Abraham Darby retained the accustomed size of the wagons, and adopted for them a cast-iron wheel having an inside flange, and a cast-iron axle-tree on to which the wheel was wedged. These wagons, wheels, and axle-trees continued to be used long after rails of cast iron had been substituted for the wooden rails, and until a narrower gauge of road and a different pattern of rail were introduced.

The chief source of the supply for the Coalbrookdale furnaces in the eighteenth century appears to have been the coal mines at Colemere, Colemere Woods, Guestlands, and Threstlecocks, where, however, the industry was carried on under considerable difficulties, it being found necessary to 'pump or wind the water by hand-turn' out of the mines in order to get the coal. Andrew Cartwright, a collier, was thus employed for several years at 7*s.* a week. According to his testimony before an Exchequer Deposition by Commission in 1754, 'a sough' was driven to the coal mines, some few of the Ebb or Bassett coals being got, but the level was lost in making the 'sough.' The coal yielded by these mines was chiefly that known as 'Clod,'[9] 'not fit for any other use than for furnaces, not for private use, or for smiths' forges,' rain or air 'in a little time causing them to moulder.' Henry Rainsford, a witness before the same commission, deposed that such coals were 'seldom carried to Severn side for sale.' Coalbrookdale, indeed, seems to have absorbed the whole of the output from these particular mines, Henry Onions, who had found clod coals on his land, having to leave the same ungotten for want of a market. From 1726 to 1742 the yearly supply to Coalbrookdale was estimated at 3,700 stacks of coal of 35 cwt. each; in 1754 experts declared the amount to be 5,400 stacks. The price of the coal, laid on the pit banks, was 4*s.* 6*d.* per stack, 3*s.* 4*d.* being the cost of getting, and a royalty of 1*s.* 2*d.* being paid to the owners.[10]

Part of the adjacent township of Little Dawley is immediately contiguous to the part of Little Wenlock from which coal had been supplied to the Dale; and there had been workings upon it by William Ferriday, a master collier. In 1733

[9] Clod coal, lying above the 'crawstone,' and so called from being placed between two measures or clods; Hartshorne, *Salopia Antiqua*, 362.

[10] Exch. Dep. by Com. Hil. 27 Geo. II, No. 8. Joseph Bayley, 'well skilled in mines,' was employed by the Coalbrookdale Company as 'latcher' at these mines. Latching :—to see and prove whether the coals are fairly got, and the works not wronged, and that colliers do not leave any coals behind them.

Lord Craven, the owner, leased all the coal and ironstone works, and the mines then known or that might be discovered within the manor, to Thomas Barker of Gadlies in Flintshire, with the liberty to sub-let or assign to William Ferriday, then resident at Wyer Hill near Buildwas. William Ferriday continued to work the coals, and in 1740 he erected a fire-engine cylinder and pump works upon part of Lightmoor. Anthony Barker & Co. of Gadlies were engaged in similar mining work, as pipes in 1742 and a fire engine in 1745 were supplied; and possibly Thomas Barker of Corngreaves was one of the family. A forge was commenced at Lightmoor, probably by William Barker, before a furnace was built, and as early as 1755. Some years afterwards there were two furnaces worked by members of the family of Addenbrooke and Homfray.

The extension of mining and works away from the river led to some unexpected complications, out of which arose, in 1759, a partnership between John Wilkinson, then of Shrewsbury, Brooke Forester, esq., of Dothill, and a few others, under the designation of the New Willey Company. This apparently was John Wilkinson's introduction to Shropshire. Amidst the controversy the Dale Company were half inclined to remove their foundries to New Dale, near Ketley. Some of the difficulties were, however, adjusted, and in 1762 a concordat was arranged between Abraham Darby for Coalbrookdale Company, Isaac Wilkinson for Bersham Company, and John Wilkinson for New Willey Company, for similar prices to be charged to customers: for all fire-engine materials, cylinders, and bored articles at one price; pipes or articles not bored, at another, on equal deliveries, London excepted.

The supply of 'Fire Engine' materials had become important and was extending. Between 1740 and 1750 large cylinders and much pump work had been sent into Derbyshire, Leicestershire, and Staffordshire, and through Bristol into Cornwall. In 1763 Coalbrookdale produced an engine for the use of the Walker Colliery in Northumberland. The diameter of the bore was upwards of 74 in., the length 10½ ft., the weight, exclusive of the bottom and piston, 6½ tons.[11] Later on, to 1770, such articles had been sent into Cornwall to Poldory Dolcoath, Wheal Virgin, Chasewater, Rosewarne, and other mines; and to Newcastle-on-Tyne for Lord Ravensworth, Sir John Delaval, J. H. Delaval, P. Lambton, Sir Charles Sedley, and other colliery proprietors. One or two of these engines were erected under the supervision of James Brindley. Most of the cylinders were 10 ft. in length, and were 63 in., 64 in., 67½ in., and one 70 in. in diameter. It was a matter of difficulty to transport these ponderous things, weighing 5 tons or so each, to so great a distance. Those for Newcastle were forwarded by the Severn to Bristol, and thence shipped either direct or to London. The time occupied ran into months; in one instance nearly twelve months passed before the cylinder arrived at Newcastle. Delays of this character were disastrous to both sides, and led to the movement of business into other quarters. The work sent out from the Dale was generally approved; and on this ground, when Dr. Roebuck was arranging in 1759 to commence the works at Carron, he made inquiries about the working of the furnaces and their arrangements. He also engaged Robert Hawkins, a son of John Hawkins, late of Bersham, who was one of the outdoor superintendents at the Dale, to take a similar position, and two or three workmen as moulders at the new works at Carron. With them was a young man named Peter Price, who afterwards settled at Neath Abbey.

Meanwhile, in the manor of Madeley, the lords were desirous to have developments made of the minerals. In 1742 John N. Smitheman had put up a large fire-engine cylinder, with pipes for pumping and sinking, at the Lower Lloyds. In 1756 the lords let certain pits at the Lower Lloyds to George Goodwin and William Hallen of Coalbrookdale, and Robert Palmer of Madeley, but with stringent conditions against working near the river, or to the disturbance of the engine.

They leased in 1757 other premises to Henry Rainsford, George Goodwin, and Edmund Ford, with the apparent intention to induce the erection of a furnace; and in 1765 they formed themselves into a partnership with George Goodwin, who was appointed manager, to work the coal in other parts of the estate.

Henry Rainsford, who was a solicitor, did arrange a partnership or company under the designation of the Madeley Wood Company for building furnaces with fire engines, and workshops, moulding rooms, and warehouses at Madeley Wood, with the Rev. William Hinton, William Elwell of West Bromwich, and others who were members of the partnership. Mrs. Barbara Slaughter, one of the lords, sold her interest in the manorial property to Rev. William Hinton and William Elwell in 1774. It is doubtful, however, whether the intended furnaces were completed at this time.

The great dislocation in the Coal Measures extending from Lightmoor on the rise, across to Snedshill and St. George's in the Deep, delayed colliery enterprise in the deeper part of the coalfield until the assistance of machinery could be more easily obtained.

Thomas Botfield, who resided at Lightmoor, became interested in some way in colliery work and management there and in Madeley. He afterwards became agent for Isaac Hawkins Browne of Old Park, and then lessee of the

[11] Richardson, *Table Bk.* ii, 109.

mines. He commenced the colliery and built two furnaces in the Old Park, which were increased into more extensive works later on.

Earl Gower was encouraging some attempts to work coal, as well as making some on his own account, and the same thing was taking place at Wombridge; but in the course of the next few years furnaces were built at Donnington Wood by the Ketley Company, and at Snedshill by J. Bishton & Co.

The decease of the second Abraham Darby occurred in 1763, in his fifty-second year. His sons were aged thirteen and eight respectively. He was a man of remarkable ability, and quite equal to his father in enterprise.

Richard Reynolds of Bristol, who became a partner in the concern in 1756, and married Darby's eldest daughter in 1757, when he took up his residence at Ketley, succeeded as the principal resident partner in the company.[12] The demand for pig iron—which had continued to increase, so that occasionally wagons were waiting at the Ketley furnaces to take it to one of the not distant forges before it had become cold after running—abated in 1768 and 1769, and probably finding that the rails of wood were not equal to the increasing traffic upon them Richard Reynolds determined to substitute cast iron.[13] Indeed, it was chiefly owing to commercial reasons that delay in so doing had occurred. This substitution was undertaken in the years 1768, 1769, 1770, and 1771, in which years about 800 tons of cast-iron rails were laid. It is very probable further quantities were laid from Ketley. These rails were 6 ft. in length (some small number being 7 ft.), $3\frac{3}{4}$ in. broad by $1\frac{1}{4}$ in. thick, with two end and two intermediate snugs for wooden pegs for fixing to the sleepers.

The Shropshire coalfield, says Mr. Galloway, contests with the north of England the honour of being the first to employ railways at its mines.[14]

This fact receives corroboration from the following statement by the Rev. Francis Brokesby, writing in 1711 :—

> At Madeley are considerable cole mines into which they descend not, as in other places, into pitts; but go in at the side of a hill, into which are long passages, both strait forward, and from thence on each side; from whence they have dug the coles: which, by small carriages, with four wheels of above a foot diameter, thrust by men, they convey not only out of the long underground passages, but even to the boats which lye in the Severn ready to receive them.[15]

Sir Humphry Mackworth, a Welsh colliery-owner in the seventeenth century, who is supposed to have been a Shropshire man, introduced a railway or wagon-way from his collieries to the waterside at Cardiff about 1699, which seems to have been suggested by those evidently in use at this date in the Shropshire coalfield. 'These waggon-ways,' according to evidence in 'The Case of Sir Humphry Mackworth on the Report of his Complaints for Breach of Privilege,'

> are very common, and frequently made use of about Newcastle, and also about Broseley, Bentall, and other places, in Shropshire, and are so far from being Nusances, that they have ever been esteemed very useful to preserve the roads, which would otherwise be made very bad and deep by the carriage of coal in common waggons and carts.[16]

It was in 1766 that Thomas and George Cranage, the one a forge superintendent, the other an iron founder in the Dale Company's works, explained to Richard Reynolds their observations upon the practicability of converting pig iron into wrought iron by means of a Reverbatory furnace, and a patent[17] was obtained in their names for the process which they had discovered. The process was not worked through sufficiently to make it a commercial success; but wrought iron made by it was quite satisfactory in quality. It is easy to see, in these long subsequent days, where points of difficulty would arise, and how these could have been overcome, but probably there was still a strong prejudice in favour of charcoal-made bar iron. Not more than a small quantity of under 20 tons was sold.

As soon as Abraham Darby and Samuel Darby, the sons of the second Abraham Darby, became respectively of age, they assumed the conduct of their own affairs, their brother-in-law Richard Reynolds retiring from Coalbrookdale in 1768. After a short time Abraham

[12] Reynolds first came to Coalbrookdale in 1756, to transact certain business for Thomas Goldney, of Clifton, who was a partner of Abraham Darby. His marriage to Hannah Darby followed in 1757, when he also became partner in the coal and iron works at Ketley, five miles from Coalbrookdale. Rathbone, *Memoir of Reynolds*, 16.

[13] By a curious coincidence it was at Coalbrookdale where iron rails were first laid that Richard Trevithick records in a letter to Mr. Davies Gilbert, dated 22 Aug. 1802, 'the Dale Company beginning a carriage at their own cost for the railroads, and forcing it with all expedition.' Gilbert, *Life of Trevithick*, i, 155.

[14] Galloway, *Ann. of Coal Mining*, 224. Of the Shropshire roads at this date it is stated that they were 'narrow, steep, unprotected, unfenced, almost impassable in winter.' The whole of the traffic between Shrewsbury and Bangor was carried on by means of a small cart travelling once a week. *Shrops. Co. Rec.* No. viii, p. 1.

[15] Galloway, *Ann. of Coal Mining*, 202. Professor Pepper, he adds, speaks of Coalbrookdale as being celebrated as the place where railways formed of wood were first used in 1620–50. *Playbook of Metals*, 23.

[16] Leland, *Itin.* (ed. 1768), vi, 100.

[17] No. 851 of 1766.

Darby made the bold venture of negotiating, with the assistance of John Smitheman (who was a solicitor), the purchase of the considerable property and manorial rights of the families of Smitheman and Giffard, and also of their lessees of minerals, connected with the manor of Madeley. This comprehensive proceeding was carried through in 1776, and obviated very general difficulties arising from the joint ownership and its divisions. The immediate result was that colliery extensions were proceeded with, and the two furnaces at Madeley Wood were got to work. It is believed they were provided with an engine of some Coalbrookdale design for producing the blast. In 1785, there were at Coalbrookdale sixteen fire engines, eight blast furnaces, nine forges, and twenty miles of rails.[18]

The confirmation by Act of Parliament in 1775 of James Watt's patent of 1769, and the economy in working from the separate condenser, and also the double impulse of steam, caused many of the older engines to give place to new ones. Some of the smaller cylinders were made by John Wilkinson at the Willey Foundry; but the larger work at his foundry at Bradley or Bilston. The large pumping engines at Ketley and Coalbrookdale for working the furnaces were superseded in 1781 by others with cylinders 11 ft. long and 66 in. in diameter made from the plans and designs of James Watt, for which he was remunerated by payment of one-third of the saving in coal upon an agreed basis of duty or work. Some of the difficulties in those early days arose from imperfect tools and weak appliances. In 1751 a 54-in. cylinder made for Lord Ward by the Dale Company was 'examined and declared to be exactly bored, viz., within $\frac{1}{16}$ of an in. in all the working part.' In 1776 James Watt wrote that a 'Cylinder of 50 in. diameter put up at Tipton does not err the thickness of an old shilling in any part.' James Brindley tried unsuccessfully to devise a steam boiler, of which the shell was of wrought iron and the ends were cast iron. At that period, 1755, the boiler or engine plates were hammered out at the forges, and their weight appears to have been under 40 lb. each. In 1798 223 boiler plates, assorted sizes, rolled at Horsehay from slabs, weighed 4 tons 1 qr. 12 lb. At Horsehay first, then Ketley, and no doubt at Old Park, forges and rolling mills (but for small bar iron only) were commenced about 1790. Refinery fires were used at the forges before the metal was subjected to whatever form of treatment was adopted to fully decarburate it, but puddling as afterwards known was not introduced. It is not clear whether John Wilkinson had a rolling mill at his forge at Snedshill, or whether one was provided before the forge had passed to Bishton and Onions in 1802. The 'Whimsies,' or large vertical frameworks around which the pit rope wound or unwound, were worked by horse-power until about 1790, when coal-winding engines with wrought-iron boilers were introduced. Such engines and boilers were supplied in 1791 to the New Works Company, Benjamin Rowley, Snedshill, John Woodhouse, Bedworth, the marquis of Stafford at Donnington, and others, and wrought-iron boilers to Richard Banks of Wombridge and Madeley Wood; but these were not the earliest.

Excepting at Coalbrookdale, the forges for making wrought iron were not at the same places as the furnaces, nor did they belong to the same owners. They were all situated where water power was ample and charcoal easily obtainable;[19] but nearly all at points where the cost of receiving pig-iron and disposing of the manufactured product must have been great. The prices charged in 1718 were for pig-iron £8 10*s.* and for bar-iron £21 per ton, and in 1772 were for charcoal pig-iron £7 12*s.* 6*d.*, coke pig-iron £6 10*s.*, bar-iron £20, 'Boyler' plates £28 per ton. The oldest of the forges were at Pitchford, belonging to members of the family of Corfield, long connected with iron making; at Sutton on the Rea, and at Atcham, or Upton on the Tern, then belonging to William Wood of Wolverhampton, and at Caynton near Newport, also on the Tern. William Wood is reported to have been connected with forges in several counties. In these Shropshire works he associated with him in 1720 Thomas Harvey, a brother-in-law of the first Abraham Darby, in whose time the first slitting and hoop mill was added. Through Harvey's grandson the works passed in 1738 to Joshua Gee, of London and Frizington in Cumberland. Very probably from him the use of hematite ore at the forges was introduced. Much later the works passed to other tenants, the last being one of the most important—William Hazeldine of Shrewsbury, who here executed most of the forged wrought-iron work for the Menai and Conway Suspension Bridges. The early members of the Hallen family came from Holland and settled at Stourbridge. Thence they moved into Shropshire. Cornelius Hallen purchased a small property at Coalbrookdale and rented the Upper Forge there in 1705. He and his descendants named Oram carried on the business of 'Plating' or making articles by hammer work for years. William Hallen, apparently more wealthy than his relative, preferred the heavier branch of the business in manufacturing bar-iron. He and his descendants were connected with three or four forges upon the Tern river, and with others farther off. Gradually coke pig-iron was regarded with

[18] Rathbone, *Mem. of Reynolds*, 283.

[19] In 1791, the demand for underwood for the use of the charcoal forges was considerable; cordwood was selling at 17*s.* per statute cord. *Shrops. Arch. Soc. Trans.* iv, 87.

less disfavour, and after 1750–60 it was purchased in increasing quantities by the older Worcestershire forge masters, as Thomas Foley (or Lord Foley), Edward Knight of Wolverley; James Knight of Bringewood, the Crofts of Cradley, and Powick, Samuel Galton & Co., and several others. The Dale Company in 1760 leased the Towns Mills at Bridgnorth for the purposes of a forge, which was continued for several years. Near Bridgnorth were other forges on the river, as at Linley, Eardington, and Hampton Loade. The bar iron made at most of the smaller forges was sold to large wholesale merchants in quite the earlier times at the fairs at Dudley and Stourbridge, and later on a quarterly meeting at Stourbridge for this business became a recognized arrangement and the precursor of the important Quarter Day at Birmingham. Ambrose Crowley of Stourbridge was one of the earliest of these influential merchants. So long as most of the forges were worked wholly, or even partly, with charcoal the introduction of the new methods proposed by the Cranages or by Cort would make little progress. It was only at the works which were near to collieries, and where the owners built furnaces suitable for the use of coal, that the new process could be used. The indications pointed to the gradual extinction of all the charcoal forges,[20] with the transfer of the several businesses to other persons, and at other works, which change came rapidly in the latter years of the century.

The growth and importance of the iron trade nearly at the close of the century in which it had been steadily developed, may be most fully understood from the subscriptions made by the principal employers for the assistance of the workpeople at a time of extreme depression in 1796. These were then

| | £ |
|---|---|
| Messrs. Bishton & Co. . . . . | 1,500 |
| Mr. Botfield for Old Park Company . | 1,500 |
| Mr. Joseph Reynolds for Ketley Company | 2,000 |
| Mr. Dearman for Coalbrookdale Company | 1,500 |
| Mr. William Reynolds for the Madeley Wood Company . . . . . | 1,000 |

Richard Reynolds had then withdrawn from active business, but he subscribed £500. He had purchased from his brother-in-law the large manorial property about 1782, and was still influential in all local affairs. His brothers-in-law had died, Abraham Darby in 1789, Samuel Darby in 1796, and in 1803 his son William Reynolds, who took so much interest in all matters for the extension of the works and the means of transport by road or canal, also died.

The amount of iron produced in the county from 1788 to 1830 was as follows:—1788, 24,900 tons; 1796, 32,969 tons; 1806, 54,966 tons; 1830, 73,418 tons.[21]

In 1848 there were in Shropshire thirty-one furnaces in blast, four furnaces out of blast, the output of iron amounting to 111,020 tons.[22]

In 1860 there were thirty-two furnaces in Shropshire, twenty-six of which were in blast. The amount of pig-iron produced was 145,200 tons.[23]

Coming down to the year 1839 the chief productions of the company were bar-iron, beams, castings for bridge-work, agricultural implements, and the hollow ware for the manufacture of which Coalbrookdale originally obtained its celebrity.

Subsequently to that period the attention of the company was directed to the production of ornamental castings, in addition to those above mentioned, and in the year 1851 the works were producing 2,000 tons of finished iron per week, thus carrying on at that time the largest iron trade in the world. We need not dwell on the exhibits of the company in that year or of the awards made by the jurors, as they have become matters of history. Mention may here be made of the famous 'Eagle Slayer,' by John Bell, to whom a gold medal was awarded for the two castings in iron and bronze, and they maintained their reputation by their exhibits at subsequent exhibitions both at home and at Paris and Vienna.

The works continued to flourish under the two brothers Abraham (the fourth of that name) and Alfred Darby. Their manager, Mr. Charles Crookes, was the designer of the famous park gates of bronze exhibited in 1851. The Albert Edward Bridge with its noble span across the Severn between Coalbrookdale and Buildwas, constructed to carry the branch line of the G.W.R. from Wellington to Craven Arms in 1863, is proof sufficient that there was no falling off in the designing and constructive powers of the Dale men during that period; and they may be said to have gone on improving in making grates, pumps, engines, including the patent electric high speed engines, pumping engines, steam engines, vertical, horizontal, and compound blowing engines, air compressors, tank locomotives, and all classes of machinery.

For some years before the close of the century the operation of the company, so far as the making of iron and the manufacturing of it into bars and sheets were concerned, became greatly restricted. The mines had long ago given signs of exhaustion and were closed one after another, whilst the blast furnaces at Horsehay, the Castle

[20] In 1803 a portion of the fuel used at Coalbrookdale consisted of charcoal. Randall, *Wilkinsons*, 38.

[21] Kendall, *Iron Ores*, 32. The fortunate position of Coalbrookdale as regards its 'singular combination of coal, iron ore, and lime, with the advantage of water carriage,' rendering the district the 'centre of the most extensive iron works in the kingdom' at that date, did not escape the notice of Aikin, *Tour*, 193.

[22] Porter, *Progress* (ed. 1850), 269.

[23] Warrington Smyth, *Geol. Mem.* (1862), 243.

Dawley, and Lightmoor were successively put out of blast.

Mr. W. G. Norris, J.P., who had filled various responsible offices under the company, assumed the management of the works at Coalbrookdale and Horsehay in 1866, in which he was ultimately assisted by his nephew, Mr. E. L. Squire, upon whose death in 1897 he gave up all active share in the works, retaining only his interest in them as a partner.

Mr. Sinclair, from the Carron Works, succeeded Mr. Norris and his nephew, Mr. Squire, and Mr. Brookbank has recently succeeded Mr. Sinclair in the management of the works. The small workshops, each under the charge of a foreman, who contracted to do certain work and employed and paid the men under him, have in some cases been thrown open, while the majority have been replaced with larger and more commodious buildings, where the various processes are carried on under more favourable conditions than heretofore. A huge engine supplies the motive power for the fans which blow the blacksmiths' fires in the forges and for other machinery. The water for the engines is no longer obtained from the brook which gives its name to the little valley in which the works stand, on account of its hardness, which necessitated the frequent cleaning of the boilers, an operation which also helped to wear them out. It is now supplied from the Severn by a steam pump and conveyed through pipes into a tank in the wood, capable of holding 50,000 gallons, and thence to the works, where it can be used in case of fire at sufficient pressure to obviate the necessity of using a fire-engine.

The castings are cleaned by means of sand blast, whilst grinding and polishing is performed by revolving sandstones, emery, and brushes. An important department is the manufacture of iron frames for pianos for such well-known makers as Broadwood, Brinsmead, Chappell & Co., Collard & Collard, and others, each of whom has a distinctive pattern.

Several bronze tablets ordered by the Lord Mayor of London, and intended as memorials of each of the fifty-eight C.I.V.'s who fell in South Africa, were executed in these works. Articles manufactured by the company requiring to be enamelled now undergo that process in the works, whilst electro-plating, nickeling, and bronzing are also carried on.

The works at Donnington Wood, referred to by Mr. Reynolds, were situated in a part of the field where shafts were sunk varying from one hundred to three hundred yards in depth and having twelve seams of coal; they were afterwards carried on by the Lilleshall Company, but are now in ruins.

On Mr. Reynolds' retirement from Ketley his shares in the works were turned over to his two sons William and Joseph, of whom the former was the more distinguished. He saw the advantage of bringing science to bear upon practice in developing the rich mineral resources of the district, and of knowledge and discovery keeping pace with aptitude in their use. To attain this end he became a pupil of Dr. Black, the discoverer of latent heat, and was thus enabled to bring the knowledge of elementary substances and their peculiar qualities gained in the laboratory to bear upon the manufacture of iron in the furnace and the forge, and to anticipate some of the discoveries of later times.

This country, at that time, imported large quantities of iron and steel made from the magnetic and richer ores of the Swedish and Siberian mines, and Mr. Reynolds, thinking he saw his way to compete with this foreign metal, introduced manganese into the refining during the re-melting process, and by so doing succeeded in producing bar-iron of better quality than had hitherto been made from coke-iron. From subsequent experiments the percentage introduced of metallic manganese could be traced into bar-iron, the inference being that the purpose served was the additional supply of oxygen it gave to burn out the impurities—a result the Bessemer process has since obtained in another way. When it is remembered that the end to be attained in these processes is to consume the impurities, and that these impurities are of such a nature as to unite with oxygen at a high temperature and form separate compounds, also that this boiling and bubbling up of the liquid metal was carefully watched and tended formerly,[24] one can understand how near the iron-kings of a past age were to the Bessemer discovery of the present. 'The old men,' as they are frequently called in the works, appear to have had an inkling of the real nature of the process. At any rate, the Bessemer invention is an adaptation of the principle acted upon at the close of the eighteenth century in the Shropshire iron-works.

Mr. Reynolds obtained, 6 December, 1799, a patent for his process, which was described as being for 'preparing iron for the conversion thereof into steel,' and was to consist in the employment of oxide of manganese in the conversion of pig-iron into malleable iron or steel, but the 'specification' did not enter into details as to the method employed for carrying the invention into effect.

Telford, the engineer, gracefully acknowledged the valuable assistance rendered by William Reynolds in planning the iron aqueduct by means of which the Ellesmere Canal was carried over the Pont Cysylltan, the necessary castings for which were made at the Ketley Foundry.

[24] The rising impurities and combination of gases indicated by bubbles were called the 'Soldiers' Coming.'

On the retirement of William Reynolds his younger brother Joseph carried on the works at Ketley alone until 1817, a year which was marked by a fearful depression in trade, when iron had gone down from £18 to £7 per ton carriage paid from Ketley to Stourport, consequent upon the expenses of the Peninsular War, which had lasted for a quarter of a century, the reduction of the army, which served to swell the poor rate, and a succession of bad harvests.

Believing that the trade would never revive Joseph Reynolds, in the following year, blew out the Ketley furnaces, and sold off the plant and machinery at an enormous sacrifice. A time of indescribable distress followed. Not only ironmasters, but manufacturers generally, were reduced to despair, and a third of the Shropshire banks failed. Starving by thousands, men might have been seen yoked like horses, drawing materials for the repair of the roads, or conveying coals into Staffordshire. Disturbances were frequent; men collected in bodies and went about taking food wherever they could find it, and the militia had often to be called out to quell the disorders. The parish authorities of Wellington advertised in the public journals for persons to come forward and take the Ketley Works; and a company consisting of Messrs. Montford, Shakeshaft, Ogle, Williams, Hombersley and others, was formed. For many years these works lay idle, but in 1903 the site of the Old Ketley Works was purchased by the Sinclair Iron Co., Ltd., for the purpose of erecting a foundry for the production of light castings. The buildings also house the plant of the Lock Steel Chain Co. Ltd., who manufacture an improved form of belting for use on agricultural machinery, conveyor plant, &c. The machine for manufacturing the chain is fed by a steel bar at one end, and the manufactured assembled chain is delivered at the other.

John Wilkinson erected two furnaces at New Hadley upon property purchased by him from Mr. Emery, for making cold blast iron, which was of so tough a nature that the men had the greatest difficulty in breaking the pigs, having to throw them down several times to do so.

The following letter from Mr. Cornelius Reynolds, of Broseley, to Mr. Thomas Pearce, on his taking the management of the furnaces and collieries at Hadley, will show the proportion of material used to produce this quality of iron:

Broseley, March 29th, 1804.

Sir,

As I hope by this time you have got the pipes to the hot water pool lay'd down, and the filling apparatus completed, and that some half charges of Top coal cokes have been put into the furnace, preparatory to beginning with mine, I therefore wish on receipt of this to begin immediately, observing the following directions. To every 5 baskets of Top coal cokes, filled as long as the cokes will properly lay on, or if more convenient for wheeling, &c., thus: 6 baskets may be filled a little above level, or the same as when I was over last, for a half charge, to which put

| cwt. | qr. | lbs. | |
|---|---|---|---|
| 1 | 0 | 0 | weight of Pinney ironstone |
| 1 | 0 | 0 | weight of Brick measure ditto |
| 0 | 3 | 14 | weight of Limestone. |

The ironstone and limestone to be broke small, say about the size of a good egg, the ironstone free from dirt or dust. This quantity to be continued until I come over next. A board should be provided and put up in the bridge house to note the number of half-charges put in, which will be useful to know about what time the mine may be expected down.

I wish it may be well scufful'd every morning and the bars kept in some time to give air sufficient to give life to the cokes, but I wish that process to be deferr'd on Monday morning until I come over, and I intend to be quite as soon as usual.

I trust any other matters wanted will be put in a state of readiness as much as possible before a beginning is made. A proper shovel for filling the cokes, tools for drawing the cokes, breaking limestone, &c., will be among the necessaries wanted.

I am sir,
Yours respectfully,
Cornelius Reynolds.

John Wilkinson had anticipated by many years the introduction of hot blast for furnaces, and that too in connexion with the plan of re-melting slag. It is only fair, however, to more recent discoverers to remark that Wilkinson failed, and failed too before a difficulty—one would imagine—easy to have been obviated. It was customary at that time, and indeed up to a much more recent period, to use leathern pipes, called bags, for the purpose of conveying the blast into the tuyere, or small opening into the furnace. Wilkinson's hot blast, of course, scorched the leathern bags. These leathern bags or pipes, terminating at the entrance to the furnace, but protected at the end by an iron or earthern nozzle, were deemed essential to permit of the frequent removal of the pipe from one side to the other, or altogether, as the 'keeper,' or furnace-man, wished to regulate his tuyere to preserve a free admission of the compressed air. Long before the hot blast had been re-introduced as a discovery these leathern pipes had been superseded by metal ones which, being turned by the lathe, or bored, were much more convenient, by sliding one within the other, upon the principle of the tube of a telescope. So that, when hot blast was again introduced, the same difficulty did not exist.

Wilkinson died at his house at Hadley, 14 July, 1808, and his body, which was encased, not in the iron coffin that he had cast for himself many years before and which he kept in his greenhouse, but in a leaden and wooden coffin chosen by his executors, was taken in a hearse drawn by four horses to his estate at Castle Head, where he was buried in his own grounds, in front of the mansion.

After Wilkinson's death the works were carried on for the trustees by Mr. Pearce and Mr. Adam, between whom and Messrs. John Bradley & Co., of Stourbridge, the following agreement was made :—

London, March 26th, 1813.—James Adam, on the part of himself and other executors and trustees of the estates of the late John Wilkinson, and John Bradley, of Stourbridge, on the part of himself and James Foster, his partner in business, mutually agree as follows :—

The said John Bradley, and James Foster, agree to purchase, and the said James Adam agrees to sell the whole of the pig iron made at the Hadley Iron Works, part of the estate, of the said John Wilkinson, for seven years next after the twenty-ninth day of June, in the present year, (1813), on the following terms.

The iron to be made in the usual way, and as it has been made for these last two years, without any unfair means being used to increase the quantity at the expense of the quality, and the whole of the iron so made to be considered and reckoned as of one quality, whether part of it be melting iron, best forge, or of inferior quality, and charged at five pounds, seven shillings and sixpence per ton of the usual weights of 120 lbs., to the cwt.

On the death of John Wilkinson in 1808 his estates were left in the hands of executors for a period of twenty years, but owing to disputes between rival claimants litigation ensued, lasting for seven years, by which time the various works had been disposed of at great sacrifices. Those of Donnington were taken over by 'The Lilleshall Company.'

The district not only yields a good quantity of coal, but ironstones of the 'clayband' class also abound, the stack amounting to 32,000 tons. During the past century the company have raised a vast quantity, as is evidenced by the spoil tips or mounds which now disfigure the whole of Donnington Wood and part of Priors Lee and Wrockwardine Wood. It may not be generally known that 3 tons of stuff has to be wound to yield a ton of ironstone, but when it is recognized, it will be well understood how rapidly such spoil mounds increase, and how soon, after ironstone mining commenced in earnest, a one-time beautifully wooded country lost its pristine loveliness.

A great quantity of this stone was gotten between 1840 and 1890, but owing to the cost of raising, and much cheaper ores being obtainable, as well as the fact that cold blast pig-iron is comparatively little used, the quantity now wound is small. The quality of this stone can scarcely be equalled, for it is this that has made the name of the company so well known to all users of pig-iron. Without this stone it would be impossible for the company to manufacture the cold blast pig-iron, which one finds so highly recommended in all foundry text books and technical works.

With such good fuel and high-class ironstone in the district, it was only natural that manufacturers should turn their attention to the manufacture of pig-iron. In the early history of the company blast furnaces of a primitive type were used, and there are the remains of such furnaces to be seen in the district now; but in the year 1824 the company started to put down a large plant at the Lodge (not far from the original site of Lilleshall Hall, the first hall occupied by the ancestors of the duke of Sutherland), which eventually consisted of five furnaces, 70 ft. high. Of course these were cold-blast furnaces, as hot blast was not known until later. Nothing but the best selected coal and ironstone were used at these furnaces, and there is no doubt that in all the history of pig-iron manufacture, no other quality ever excelled that made at the Lodge.

This iron was sent all over the world, and it is stated that when Lord Napier of Magdala entered Magdala with his victorious army a piece of this pig-iron was found in that city. These furnaces were worked fully for very many years, but gradually after hot-blast pig-iron came to be generally manufactured, and cheaper iron sought for, and more particularly when Bessemer steel began to affect the out-put of iron, they were blown out one by one, until it was decided to abandon them and concentrate all the furnace plant at Priors Lee. The last furnace was blown out in 1888.

As soon as the company found out that hot blast pig-iron had come to stay as the cheapest method of making pig-iron, they decided to put down a plant of four furnaces at Priors Lee. These were built, and on Christmas Eve, 1851, the first cast of iron was made. Since that time an immense quantity of this pig-iron has been turned out and used in all the large forges of South Staffordshire and elsewhere, besides locally, and in other departments of the company.

The firm makes its own coke for use in the blast furnaces. Formerly it was made in open hearths, but it is now made in beehive ovens, of which there are 150.

Since the furnaces were erected there have been many modifications, alterations, and removals of the original plant; for instance the first furnace casings were of brick and were only 60 ft. high. These have all been pulled down and replaced by three large furnaces 70 ft. high; they are iron-cased and are supplied with hot blast from six Cowper stoves which have supplanted the original pipe stoves, and the company have a pair of fine blast engines of the latest type.

From these furnaces the company supply the cold-blast pig-iron, similar to that made at their Lodge furnaces years ago, for which they have a steady demand, hot-blast all mine pig-iron similar to that supplied in the early years of hot blast, and basic pig-iron which is used in the basic Bessemer department.

The chief forges and rolling mills in the neighbourhood have always been the Snedshill forges and mills. These were erected about

eighty years ago by Messrs. Horton, Sims & Bull, and were afterwards, about forty-five years ago, taken over by the Snedshill Iron Company ; later this company became a 'limited' company, and in 1888 was amalgamated with the Lilleshall Company, Limited. From the commencement the works have been supplied with fuel and pig-iron by the Lilleshall Company, Limited, and it was due to the excellent raw material used that the Snedshill iron owed its reputation, second only to Low Moor for the quality of its bars, rods, and plates.

Before the introduction of steel for boiler plates the Snedshill Iron Company had one of the largest trades in boiler plates in the kingdom. Of course, when steel became such a factor it was impossible to confine the mills to the rolling of iron, and since the works have been taken over by the company a large quantity of steel ingots has been rolled into rods, bars, and plates, and this has been further developed by the transference from Snedshill to the steel works of the twenty-inch mill, which occurred in 1898, when the mill was brought up to modern requirements by the addition of 'pusher' live rollers and other arrangements. To this mill all the steel ingots made in the Bessemer department of the company are taken and rolled down into billets, plating bars, round and flat bars, and sectional iron. At the Snedshill Mills the small sizes of steel are rolled down from billets made in the twenty-inch mill. The mills both at Snedshill and at the steel works have been fully employed for some time, and with the efforts that have been made by the company to bring them up to the best form should be able to compete even in depressed times. At present there are working eighteen puddling furnaces, four ball and scrap furnaces, nine mill-heating and annealing furnaces, wire mill, guide mill, bar mill, plate mill, and steel mill.

In the previous remarks reference has been made to the basic Bessemer department. When it was found that the Gilchrist Thomas Basic process was generally proving a success, the company's attention was drawn to it, and experimental plant was put down in 1881 ; soon afterwards the company put down three converters each of six tons capacity, with all the necessary engine power, &c. The output of ingots is between 500 and 600 tons a week.

The company have been founders and engineers for a long period. In the early part of the century there was a foundry and small engineering shop alongside the canal at Donnington Wood, and fairly large castings, for those days, were made there. Several large railway-bridge castings are still, or were until recently, to be seen in some of the local railway bridges. In 1860, however, the company opened the present extensive works at St. Georges, and there manufacture many kinds of stationary engines and machinery ; castings up to 40 tons weight are made. For certain class of work such as pumping plant and blast engines they rank second to none in the kingdom, but they also make steel works plant, viz., converters, converter engines, ladles, mixers, &c., as well as rolling-mill plant, &c. They have, from time to time, secured some large contracts for pumping plant from corporations and London water companies, as well as from foreign governments, and some of the best furnace plant in the country contains a Lilleshall blast engine.

Under the head of Coalbrookdale, reference has been made to the early working of Madeley mines, and to a company having been formed under the title of the 'Madeley Wood Company' as early as the year 1774. Mr. Richard Reynolds purchased the manor of Madeley in 1794, by which time the furnaces had been erected ; these were leased to his son William, who carried them on by himself.

The site was a good one at the time, being at the base of the out-crop of the lowest seams of coal and ironstone, which could be thus obtained by levels being driven into the hills or by shallow shafts, from which they were let down by inclined planes to the furnaces, and close by flowed the Severn to take away either coal or iron. It may here be mentioned that the first use to which Watt's fire-engine, as it was called, was put at Bedlam, as at Coalbrookdale, Ketley, and many other places, was not to blow the furnaces direct, but to pump water to drive the water-wheel, which at Bedlam worked a pair of leathern bellows which supplied the blast. The race in which the old wheel worked is still observable, as also are the arches which supported the reservoir into which water was pumped from the Severn. On the mines in the immediate neighbourhood having become exhausted it was thought advisable to remove the works to another part of the field.

The massive arches and other portions of the dismantled buildings remain, whilst the funnels which formerly belched forth smoke and flame, illuminating the district for miles, stand like the keep and towers of some old feudal fortress.

The first furnace at Blisser's Hill was built in 1832, as shown by the date on a stone in front of the building, by Mr. William Anstice, who had become a partner in the works on the death of Mr. Reynolds.

Mr. John Anstice succeeded his father as managing partner in the works, and as by this time the mines on the western side had become exhausted, fresh ones were opened to the east and outside the old boundary, the Shawfield, Hills-lane, Tweedale, and Kemberton pits being farthest from the old workings, the latter being in another parish. This shaft is 340 yds. 2 ft. 8 in. deep, and has many points of interest. In the first place there are 230 yds. of Upper

Coal Measures, with the usual sulphur coals, similar to those occurring in the Granville shaft of the Lilleshall field. The first workable seam, the top coal, occurs at a depth of 260 yds., and has proved a very profitable seam, it being a sweet, bright, and quick-burning coal, much in demand for household purposes. It is remarkable that this coal shows traces of denudation in one of the shafts, but where undenuded it has a bituminous covering, containing much oil and the remains of fish, of the megalicthys and gyracanthus tribe.

The next in descent is the big flint, also a very valuable coal, being 1 yd. 1 ft. 8 in. in thickness.

Lower down we get the best and Randle coals, clod coal, and little flint coal, the lower measures, such as the Crawstone, not having been reached. One rather remarkable thing in this shaft is that evidences of erosion occur at two different places, and separated from each other by many yards of strata. These shafts are excellent examples of their kind; they are well ventilated, and the main roads to the workings are lofty, so that a man may walk upright in them. At the Kemberton and Hales pits the banks are lighted by electricity, the dynamo being placed at Kemberton pit. There is an underground haulage plane, 600 yds. long, between Hales and Kemberton pits, worked with an endless wire rope driven by electricity.

Electric coal-cutting is also being done at Kemberton pit, but this is at present in an experimental condition.

There are in this field several very remarkable old steam engines, two of which are now at work and have been for more than a century. They are called 'Adam Engines,' their inventor's name being Adam Hyslop, who constructed them during the time that Watt was perfecting his steam engine, and they therefore date back to an anterior period. The curator of the South Kensington Museum a short time ago came down to inspect these, as he had previously been under the impression that the one in the museum was the only one in existence.

In one of the oldest of this company's pits, worked by one of these engines, a tunnel was driven to take the coals down to the lower canal bordering on the Severn. In driving the tunnel the miners tapped a quantity of mineral oil, which continued to run for years, many hogsheads being collected and exported to the Continent under the name of 'Betton's British Oil.'

At the Madeley Wood Company's furnaces, cold-blast pig-iron is made entirely from the coal and ironstone raised in the field, and is chiefly used for the production of best Yorkshire iron, chilled rolls, and machine castings. The output per furnace is about 4,000 tons per annum. The dimensions of the furnaces are: height, 50 ft.; diameter at boshes, 13 ft.; at hearth, 5 ft. Mr. John Anstice was succeeded by his sons, John Arthur and Richard Edmund Anstice, the latter being the active partner until recently, when Mr. Cadman became manager.

Madeley Forge was founded in 1773 by Mr. Richard Walton, a well-known smith in his day, and afterwards carried on by his son Richard, who was succeeded by his son, William Taylor Walton, of Madeley, who also manufactured chains, for mining and other purposes, presses, dies, &c.[25] On his death the works were taken over by Mr. Muirhead, who still carries them on upon the same lines.

The Walton Forge at Ironbridge, originally established by Mr. R. Walton in 1774, and afterwards carried on by his son Richard and his grandson John Walton, is now in the hands of Messrs. Beddoes & Green, engineers, die manufacturers, &c.

The manufacture of agricultural and other implements is carried on at Madeley by Thomas Dorsett in succession to his father, who established the business of an ironfounder, implement maker, and machinist in 1837.

Furnaces were erected both at Billingsley and at Stanley-on-Severn for the purpose of smelting the excellent iron ore which is yielded by the former; the remains of one of these still exists, and one or two old 'bears,' or remnants of iron from the hearths of the furnaces, are still to be seen near the spot, but the numerous cottages occupied at the time by the workmen are now in ruins. Both pits and furnaces ceased operations in 1811, and a plate from the last casting made at Billingsley with this date on it is still in existence.

Local tradition says that the quality of the iron made here was exceptionally good, notwithstanding that Sir Roderick Murchison in his first edition of the *Silurian System*, published sixty years ago, stated that the coals were so impure that they spoiled the iron in the smelting. If so, they must have been very different in quality from those now being got, of which the following analysis has been made by Dr. Alfred Hill :—

| | |
|---|---|
| Moisture . . . . . | 8·00 |
| Volatile hydrocarbons . . . | 41·25 |
| Fixed carbon . . . . . | 48·72 |
| Sulphur, trace only | |
| Ash or mineral matter . . | 2·03 |
| | 100·00 |

The Childes of Kinlet, members of the family, were interested in the iron trade from 1670 to

[25] At Madeley Dr. Pococke relates that he saw the manufacture of 'octagon ovens of cast iron from 3 to 4 ft. long, and about 18 in. in diameter,' being cast at the iron works there, to be put at the back of iron chimneys. *Travels*, i, 231.

1730, being connected with the little furnaces at Charlcott, near Bridgnorth, and at Bouldon, or 'Bowden's Furnace,' near Ludlow, which in 1644 had been ordered to supply 'an iron piece of a nine pounder bullet' to assist in the defence of Ludlow. It is probable that the furnace at Bouldon was connected with the not distant forge at Bringewood,[26] of which members of the Knight family were owners or tenants. A Richard Baldwin, who died about 1730, was associated in the iron trade with Francis Knight of Downton. There were also a furnace and a forge at Hughley, of which nothing is now known, and also at Kemberton, the early history of which is obscure. Willey and Charlcott furnaces were working in their small way from 1719 to 1730, and it was about the latter year that the Willey furnace was taken or rented for a term by the Coalbrookdale Company.

Subsequently a company established themselves near to the Old Lodge entrance of Willey Park.

The Harrises who succeeded to the Benthall estate erected two furnaces thereon for smelting ironstone, one of which was blown in in 1777, and the last was blown out in 1821. They made pigs for founding and casting purposes, part being consumed at their own iron foundry, and the remainder sold. An engine of 30-horse-power, having a single and open-topped cylinder on the atmospheric principle, was employed; it could only blow one furnace at a time.

The plant was of the most primitive description both here and at the 'Smithies'; it consisted of leather bellows worked by water-wheels, and by men treading on them; i.e., a man would place his foot upon the raised bellows, and press them down so as to increase the force of the blast. There was one furnace at the 'Smithies' called the Willey old furnace, and two near the Old Lodge called the Willey new furnaces; these latter were afterwards known as the Broseley furnaces, and assessed as being in that parish.

Whether a windmill was used or not, as well as a water-wheel, we cannot tell; but in the assessment in the parish books in 1761 mention is made of the Dean's mill and of a windmill in connexion with the Willey Furnace Company *pro* Codbrook. The company alluded to spent a large capital here, which yielded them but a poor return. They engaged as manager John Wilkinson, then a young man, who had had some experience with his father at Bersham, and who shortly afterwards, when requested by the company to take the concern off their hands, came into possession of the works himself, and very soon completely revolutionized the plant.

[26] Mr. Thomas Fisher raised a company in Ludlow in the Civil Wars for the king, and took ordnance from Bringewood Forge to defend the town. *Shrops. Arch. Soc. Trans.* (3rd ser.), v, 115.

Boulton and Watt's first engine was made for these furnaces, and Watt himself, having no workmen to whom the erection of so important a piece of mechanism, embodying so many new ideas, could be safely entrusted, came over to superintend its erection, a task successfully brought to a conclusion in the beginning of 1776. Watt was somewhat anxious to make an early test of its powers, but Boulton wrote to him counselling him not to let the engine make a stroke until every hindrance to its successful action had been removed, 'and then,' said he, 'in the name of God, fall to and do your best.' The inventors were rewarded for the extreme care taken both in its construction and erection by its being pronounced a perfect success, working to the admiration of all who saw it, and thereby adding very materially to the fame of its inventors and constructors.

Wilkinson having got his steam engine now set up a forge, and we find him writing to Watt for a 'tilt hammer,' which the latter described as 'an engine to raise a stamp of 15 cwt. thirty or forty times a minute'; adding, 'many of these battering rams will be wanted if they answer.' It answered beyond expectation. Some of the smaller cylinders for the new engines which Watt's patent introduced into the district were made by Wilkinson at the Willey Foundry, the larger ones being made at his works at Bradley or Bilston.

He next turned his attention to gun-making, for in 1786 we find in one of his letters instructions for 32-pounders, for swivels, for howitzers, mortars and shells. He says 'we made some good strong iron at Willey from scraps remelted, that would have made guns, or anything requiring strength.' The letter further contains directions for 100 four-pounders, 4 ft. long, and for a number of three-pounders, $3\frac{3}{4}$ ft. long. He urges his foreman to—

> aim at the perfection required by the board; they will and do relax from the great exactings stated; but at any rate they will go down with the East India Company, whose sizes are 8 inch.

But Wilkinson was not content to confine himself to supplying his own government with artillery, but guns were sent off to the south of England for the purpose of being smuggled into France, and a number of pipes, classified as water-pipes, were got up for the purpose of supplying the French with gun-metal. These were taken down Tarbatch Dingle by means of a tramway to Willey Wharf on the Severn, where all the apparatus for a powder-mill was stored, thence to be conveyed by barges to the Bristol Channel, and there to be smuggled on board French vessels.

It is true that some of these pipes were what they professed to be, and intended for the Paris

waterworks, and their supply a *bona fide* transaction ; but others were not, and on this coming to the knowledge of the government, Wilkinson's pipe-making was stopped, and a number of these castings remained for years afterwards at the warehouse above mentioned.

Some say that Wilkinson fled to France ; anyway, he went there, and established the famous Creusot Works, which have since grown to such vast proportions, and have recently attracted public notice from the fact of their having supplied so many guns and other war material to South Africa ; he also taught the French how to bore cannon from the solid, and erected the first steam engine there, for which the savants of Paris gave him a grand banquet at the Hotel de Ville.

It was the difficulty of getting barges of the ordinary kind made fast enough to meet his requirements that led Wilkinson to construct the first iron vessel, the *Trial*. Compared with the armed leviathans of the same metal now upon the ocean, she was, it is true, a Severn minnow, but she was a notable innovation in that day, and created a wonderful sensation among barge-builders and barge-owners, and, indeed, through the kingdom generally. The barge builders had a sort of monopoly, and thought Wilkinson could not do without them ; and when he said 'I will make an iron barge,' they laughed at him. Wilkinson, however, set an ingenious smith, whose name was John Jones, but who went by the name of 'John o' Lincoln,' to work. At last, in July, 1787, the barge was ready, and a great crowd assembled to see her launched. A discharge of 32-pounders told that all was ready ; and before the smoke had well died away, the *Trial* descended the way-pieces into the river with a splash. It carried 30 tons, and Edward Palmer, who lived near the 'Woodbridge,' as Coalport bridge was then called, was her captain.

The following is Wilkinson's account of the event in a letter to Mr. Stockdale :—

Broseley, 17th July, 1787.

Yesterday week my iron boat was launched ; it answers all my expectations, and has convinced the unbelievers who were 999 in 1,000. It will be a nine days' wonder and then will be like Columbus's egg.

Wilkinson went on building other barges. In a letter dated 'Bradley Ironworks, 20th October, 1787,' he says :—

There have been two iron vessels launched in my service since 1st September, one is a canal boat for this navigation—the other a barge of 40 tons for the River Severn. The last was floated on Monday, and is I expect now at Stourport with a lading of bar iron. My clerk at Broseley advises me that she swims remarkably light, and exceeds even my own expectations.

Another reference is as follows :—

*November 8th*, an iron vessel, built by John Wilkinson, Esq., was lately launched at Willey Wharf. She is perfectly tight, moves very easily on the water, and draws about 8 inches with every accompaniment on board.[27]

In 1810 John Onions & Son of Broseley built a lighter of about 50 tons, called the *Victory*, which was designed for the Severn trade ; and also a vessel at their works at Brierley, which was sent to London in parts, and was, we believe, the first iron vessel on the Thames. In 1811 they built several which traded extensively between Brierley and London, and between Broseley and Stourport.

In speaking of the various improvements initiated by the Cranages of Coalbrookdale, and brought to completion by Henry Cort, Lord Sheffield said in 1786 :—

If Mr. Cort's ingenious improvements in the art of making and working iron, the steam engine by Boulton and Watt, and Lord Dundonald's discovery of making coke at half the present price, should all succeed, it is not too much to say that the result will be more advantageous to Great Britain than the possession of thirteen colonies, for it will give the complete command of the iron trade to this country, with its vast advantages to navigation.

There were two furnaces at the Calcutts, one of which made 20 and the other 15 tons per week of what was called 'gun iron,' which was used chiefly in the manufacture of guns, mortars, shot and shell for government contracts. A 36-horse power single engine worked the two furnaces, and another single engine of 24-horse power was erected in 1803 to blow a third furnace, which had been built a short distance away from the others.

Mr. George Matthews carried on these works at one time, as did Mr. Alexander Brodie, who, in 1786,

purchased the Calcutt Mines, stock, houses, etc., near Broseley, from which government received large supplies of cannon, and the country in general iron of the best quality.[28]

During old Mr. Brodie's time the Prince of Orange, who visited the works, made an inspection of the castings, and expressed his high satisfaction of the tests applied to the 18 and 32-pounders, some of which were fired in honour of his visit. Offence having been given to some of the servants of the government by refusing them their usual fees, a number of guns were returned on the pretext of their having been plugged. They were subsequently sold to a Yorkshire firm, and ultimately found their way to India, where they were captured, and recognized by some old Calcutts workmen both in the Burmese and Sikh wars. The boring mill stood near the Calcutts

[27] *Universal Mag.* (1787), lxxxiii, 276.
[28] *Comm. and Agric. Mag.* Dec. 1799.

house, and the turning and fitting shops were situated in the hollow by the brook.

Mr. Brodie was succeeded by his nephew, Alexander Brodie the second, who in turn was followed by Mr. William Hazeldine of Shrewsbury, the constructor of the Menai Suspension and other bridges; that at the mouth of the Wye, uniting the two counties of Gloucester and Monmouth, was cast by Mr. Hazeldine at the Calcutts. It consists of five arches, and was considered at the time of its erection a fine piece of workmanship.

The last of the Calcutts furnaces, of which there were four in the first Alexander Brodie's time, was blown out in 1828. There is still extant a rare and fine old engraving giving a good view of these works from the river.

Besides those already described, there were other works of a similar character, but on a smaller scale, and in operation about this time, also situated on the same side of the Severn. One of these, 'Guest's furnace,' as it was called, was erected on the upper side of, and very near to the Broseley fault, by one of the Guests—apparently John, whose brother Thomas had abandoned the more or less exhausted district of that part of Shropshire in order to devote his attention to the rich and then virgin field of South Wales. He was father of Sir John Guest, of the Dowlais Works, and grandfather of the present Lord Wimborne.

Another group of furnaces, the Coneybury, situate on the lower side of the Broseley fault, was worked by a single 30 horse-power engine, which operated one furnace only at a time, the make of which was from 30 to 50 tons of iron per week. They commenced in 1787, and were finally discontinued in 1823, the only record left of them being the Toll-house at the junction of the Ironbridge and Dingle roads, which was originally the company's office.

The Barnett's Leasow furnaces, of which there were two, stood near the ferry-boat at Coalford, and were erected by Messrs. Wright & Jesson, who carried them on in the early part of the last century. They were succeeded by Mr. Phillips, who had had much experience in South Wales and other places, and he soon increased the make from 35 tons to a maximum of 80 tons per week for the two furnaces, a large output at that time. The metal was principally used at the forge then situated at the Wren's Nest, near Apley.

The works were operated by a double 36-in. engine of very superior construction. Not a vestige remains of them now, and the Severn Valley Railway passes over the ground upon which they stood.

The works next in importance were the Calcutts, situated on the lower and deep side of the Broseley fault, and within a couple of hundred yards of the Severn. It was at the Calcutts furnaces that Lord Dundonald erected a number of large ovens, termed 'stew-coal' ovens, with a view of extracting oil or tar, and cheapening coke for making iron. From each cwt. of coal he obtained 4 lb. of tar, and from this were extracted volatile oils, and some varnishes adapted to japanning purposes. The process consisted in conveying the liberated gases from these ovens by means of flues into a capacious funnel or chamber built of brick and supported on arches, where water for the cooling and condensing of these gases was brought by means of numerous leaden channels. The condensed product was then carried by iron pipes into its own receptacle, and thence pumped into a boiler to undergo a further process of sublimation or refining. The various products found a good market in the dockyards and elsewhere, the Severn affording a convenient means of transit.

The gas thus distilled and condensed was nothing more than that which modern science has since taught us to turn to account in lighting up our streets and houses. It often used to take fire and explode, wrecking all the solid masonry surroundings.

The earl, whose life was devoted to scientific pursuits, rather to the injury than the improvement of his fortune, is known in connexion with various patents and publications, notably by *A Treatise on the Intimate Connexion between Agriculture and Chemistry.*

Lord Dundonald took out a patent[29] for extracting coal tar and other products from coal in 1781.[30] Of the works which he erected in Shropshire, as well as in Staffordshire, he writes that they were 'the only productive, properly placed, and constructed tarworks' in the kingdom.[31] His patent was 'for extracting, not only pitch, but tar, essential oils, mineral acids, volatile alkalies, and cinders, from pit coal.' In addition to the above experiment, it is recorded that, in 1786, he had the gas from his coke ovens burned at the end of iron pipes for the amusement of his friends.[32]

Near Jackfield, on the north side of the River Severn, is carried on the manufacture of coal tar, for which Lord Dundonald formerly obtained a patent. In coking the coal, which is here done in close vessels, they obtain the volatile products which are raised in vapours by the heat of the operation of coking and condensed in a chamber covered with lead plates over which water is constantly running. These products are a water and an oil, the former of which contains a portion of volatile alkali, and the latter is boiled down to the consistence of tar or pitch. The oil, which is caught during the boiling

[29] No. 1,291 of 1781.

[30] Galloway, *Annals of Coal Mining*, 306.

[31] Dundonald, *View of Estate and Abbey of Culross*, 39.

[32] Gesner, *Coal, Petroleum, &c.* 15.

down, is used as a solvent for resin, and forms an excellent varnish for ships or any woodwork exposed to the weather.[33]

Opposite to Madeley, on the other side of the Severn (writes the Rev. F. Brokesby in 1711) lies Broseley, where there is a pitch made, which as 'tis in time of war afforded cheaper than the ordinary pitch, so is serviceable for ships and boats, and hence is sent down the Severn to Bewdley, Worcester, Gloucester, and Bristol for that service. 'Tis by fire extracted out of their coles, which consist much of a resinous substance.[34]

In Broseley, Benthall, and Pitchford there lies over most of the coalpits a stratum or layer of blackish stone or solid rock, which proves to be porous and contains in it great quantities of bituminous matter. This stone is ground small by horse-mills such as be used for grinding flints to make glass of. The powder is then thrown into boiling water whereby the bituminous matter is separated from the stony or gritty, this sinking to the bottom, the other swimming on the top of the water. This bituminous substance, which is like pitch, being mixt with an oil distilled from the same stone, becomes like tar, which is good for the use of ships.[35]

The tar spring at Coalport yielded, when first discovered, 1,000 gallons a week; in 1840 the supply had fallen to a few gallons only in the same time. Prestwich records that the sinking of a shaft at Priors Lee in 20 yards of rock resulted in the conversion of the shaft into a tar well, so highly charged was the rock with petroleum. The oil was drawn up in buckets, and kept in large cisterns. In Tarbet's Dingle from 2 to 3 gallons a day was drawn off the surface of the water.[36] Murchison notes the presence of petroleum throughout the carboniferous formation.[37] In places where it was abundant it was found necessary to protect the miners at work from the drippings from the rocks overhead by inserting iron plates in the rock.[38]

The furnaces in blast in the district in 1796 were :—

| | | |
|---|---|---|
| Donnington Wood | 2 | Ketley Company |
| Ketley . . . . | 3 | „ „ |
| Snedshill . . . | 2 | J. Bishton & Co. |
| Old Park . . . | 3 | T. Botfield & Co. |
| Horsehay . . . | 1 | Coalbrookdale |
| Coalbrookdale . . | 2 | „ |
| Madeley Wood . | 1 | „ |
| Lightmoor . . . | 3 | Homfray and Addenbrooke |
| Jackfield . . . | 2 | Joseph Jesson & Co. |
| Benthall . . . | 1 | F. B. Harries & Co. |
| Broseley . . . | 1 | John Onions |
| Willey . . . . | 1 | John Wilkinson |

In 1801–2 additional furnaces were building at Snedshill, Ketley, Madeley Wood, Barnett's Leasow and Jackfield, and a furnace was working at Old Park, Donnington Wood, and Billingsley.

The forges upon the Severn working in 1796 were :—

| | |
|---|---|
| Wren's Nest . . | Wright & Jesson |
| Yerdington . . . | Pemberton & Stokes or William Twemley |
| Hampton Loade . | |

At the opening of the nineteenth century new furnaces for iron smelting were being constantly erected in the Shropshire coalfield. Difficulty, however, was experienced in getting pitmen, for whom the demand was so great that boys not ten years old were paid 10*s.* per week.[39] The cost of winning a colliery at this date was about £1,500, best coals being 10*s.* per ton. The close of the previous century had seen application made to Parliament for powers to open the Severn to Coalbrookdale, as it was found that, in working the mines to obtain 'clod coal' for smelting, another seam was found available for the supply of coals for domestic use. Canals were in active use to serve this purpose by 1800.[40]

## MACHINERY

The Perseverance Iron Works at Shrewsbury are owned by Thomas Corbett, J.P., son of the late Mr. Samuel Corbett, agricultural implement maker, of Wellington. The manufacturing departments, the arrangement of which was designed by Mr. Corbett himself, are most complete, comprising pattern-makers' shops, pattern stores, foundry, saw mills (a very notable feature of the establishment), timber sheds, carpenters' shops, paint shops, machine shops (fitted with large lathes, slotting, shaping, drilling, punching, shearing and other machines and appliances), with the usual extensive smiths', fitting and erecting shops, &c. The boiler and engine-houses are in the centre of the machinery, and conveniently placed for the transmission of power. The store rooms for the manufactured parts are also remarkably large. Considering the demands

[33] Plymley, *Agric. Shrops.* 71.

[34] Aikin notes the finding of petroleum, or fossil-tar, near the Ketley Canal. When first discovered, this spring yielded from three to four barrels a day; in 1795 the output had fallen to only half a barrel a day; *Tour*, 194.

[35] B.M. MS. 21019, fol. 148; Lloyd, *Antiq. Salop.* In 1694 Martin Ele obtained a patent for making pitch, tar, and oil out of a stone, which he specifies in 1697 as 'a blackish stone in Shropshire'; *Phil. Trans.* No. 228, p. 544.

[36] Prestwich, 'Geol. of Coalbrookdale' (*Geol. Soc. Trans.*), v, 438.

[37] Murchison, *Sil. Sys.* 103. [38] Ibid. *Siluria*, 306.

[39] *Rep. Coal Trade* (1800), 647.

[40] Ibid. 648.

which modern science has made upon the advanced agriculturist, Mr. Corbett's improved machines for the cultivation of the land and treatment of its produce have proved a wonderful boon both in saving labour and time and in increasing the results.

Among the more prominent specialities which have received the approval of the foremost agricultural experts of the day are Mr. Corbett's patent 'Eclipse' combined blowing, winnowing, corn and seed dressing and screening machine, which contains in one apparatus the three methods of cleaning grain. Another is a combination of winnower, corn elevator, and weighing machine. This and the last mentioned together have received 155 royal and international first prizes. Mr. Corbett has been equally successful in the production of effective implements for other agricultural purposes, such as ploughs, harrows, drills, horse-hoes, scarifiers, rollers, and other 'cultivators'; also of food-preparing machinery, cheese presses, curd mills, &c., many of which have gained valuable prizes on different occasions.

The Newport Engineering Company are engineers, boiler makers, and general smiths, and have an annual output of from 400 to 600 tons, consisting of a variety of productions, such as vertical, wall, and oil engines, tip wagons and skips, pit frames and cages, mill and forge castings, turntables, foundry requisites, portable cranes, &c. The number of hands employed is from forty to fifty.

The Shropshire Engineering Works are agricultural, saw mill, and general engineers, iron and brass-founders, and boiler-makers. They manufacture portable, traction, ploughing, vertical and stationary steam engines, thrashing-machines, gas and oil engines, wood-working and wire-drawing machinery, gas-making plant, pumps and cranes, structural ironwork, castings, and hurdles. The works were established in 1825, and the company have received since that time thirty-one gold, silver, and bronze medals.

The firm of S. Corbett & Son, agricultural engineers, iron and brass founders, Wellington, was established some thirty years ago at Park Street Works, Wellington, for the manufacture of implements and machinery for use on the farm. In its early history the firm's productions were principally for local use, but they have now become well known all over Britain and abroad.

The Wrekin Foundry, Wellington, established in the first quarter of the nineteenth century, is now carried on by Mr. W. R. Mansell, and chiefly concerned with the manufacture of steam engines, iron and brass founding, and general engineering work. Among its specialities are high-speed vertical and horizontal, and high-pressure expansion engines, rotary blowers, &c.

At Donnington, early in the latter half of the nineteenth century, the late Mr. Charles Clement Walker established important ironworks. Situated in close proximity to the railway, they have the still further advantage of branch rails running in various directions, bringing crude and malleable iron and timber, and conveying the finished productions to the main artery of traffic.

The works occupy 12 acres of ground, and from 600 to 700 workmen are employed in forging, fitting, or putting together gas plant and gasometers, which are afterwards exported to all parts of the world.

Gas is manufactured on the premises for the use of the works, as well as for lighting the village of Donnington, and a main also conveys gas to Lilleshall Old Hall, a mile and a quarter distant, for the use of the proprietor.

The extensive ironworks of the Shropshire Iron Company, Ltd., are conveniently situated at Hadley, in the vicinity of the Shropshire Canal and the London and North Western and Great Western Railways. The plant includes thirty-nine puddling and other furnaces, two steam hammers, wire, hoop, drawing, and galvanizing mills, and special plant for the manufacture of brass, copper, and steel wire. The output is from 500 to 600 tons per week.

Near here, too, are the Haybridge Iron Company's works. This company also own works at Stirchley, on the site of the old industries there, which, however, are only worked occasionally as the markets are suitable for their operations. Mr. Clement Groom of Wellington is managing director.

The Castle Car Works of Messrs. Geo. F. Milnes & Co., Ltd., have been established on the site of the old Castle Ironworks at Hadley, near Wellington, but they overlap the limits of those works, covering 38 acres of space and employing more than 700 workmen. They are an offspring of the first tramcar works in Europe, founded at Birkenhead in 1860 by George Francis Train, and taken over in 1886 by Geo. F. Milnes & Co., who, finding the rapid extension of their business required increased room, acquired the disused premises of the Castle Ironworks, and erected in their stead the present commodious works. The site is an admirable one, as the Shropshire Union Canal on the one side affords facilities for bringing timber and other material direct from the seaports to the dock facing the chief centre of operations, and on the other a branch line from the trunk of the London and North Western Railway connects the works with Hadley Junction.

The timber used is imported chiefly from America, and each log is submitted to close inspection before it is allowed to enter the works. The woods employed are chiefly ash, oak, teak, quartered oak, mahogany, and pine, all of which are well seasoned in a specially constructed shed by natural process before being brought into use.

Not only are the cars which the company

builds specially adapted for locomotion by electricity, but electricity supplies the motive power for all the machinery. The only engines employed are those which generate the electricity for the entire establishment. The dynamos, of which there are three, are powerful, and of the latest and most approved types. The saw mills are provided with every conceivable kind of saw, and automatic machines for sharpening saws and other tools. In this department there are about forty machines, all worked from the basement, the large ones being independent of each other, and each being worked by its own motor, the electric current being switched on and off at will.

As the sawdust and shavings fall from the machines they are drawn by a fan into an exhaust pipe, thence into a large main beneath the floor, and finally into a shute which carries them automatically into the boiler-house, where they are used as fuel. The same system is in operation in each department.

All the ironwork required in constructing the cars is manufactured on the spot, and hundreds of tons of iron in bars and sheets are stored on the premises. The smithy, where the iron is prepared for the special purpose it has to fulfil in the general economy, is provided with single, double, and quadruple hearths, and four steam hammers of varying capacity.

The iron machine shop, where the ironwork for the cars is made ready for the fitter, is, like the other departments, provided with lathes, drills, presses, and other machinery capable of performing an enormous amount of work, which the ordinary mechanic, with only hand tools at his command, could never accomplish.

All the iron and steel and wooden sections of the car forming the under framework having been put together, the superstructure is begun in the car-building shed, where the final processes are carried out. The door and window casements, the doors, and staircases are in readiness, and the skeleton of the upper portion of the car is brought in sections and readily fixed. The staircase ladders, dash plates, and top railings having been fixed, the painters begin their work, as many as twenty coats of paint and varnish being given to some cars before they assume the enamel-like surface desired.

Different corporations require distinctive patterns, fittings, and colours ; thus the under-framework of some cars is of wood, others are of iron, and the same applies to the outside panelling, whilst in the interior ash and oak are chosen by some, others giving the preference to teak and sycamore.

As many as 200 cars in various stages of progress are sometimes in the car sheds, awaiting transport to London, Croydon, Manchester, Darwen, and other destinations.

As already stated, this industry at the time of writing creates employment for 700 men, and bids fair from the way in which it is increasing to find work for many more, thus promising to be a boon to this part of Shropshire, where many industries have already died out or are languishing.

Since writing the above, these works have been purchased by the United Electric Car Company, Ltd., whose head office is at Preston, Lancashire. At the present moment, however, the works are being carried on by the Metropolitan Amalgamated Railway Carriage and Wagon Company, Limited, of Birmingham, this firm having obtained a lease of the car works from the United Electric Car Company, Ltd., for the purpose of building railway coaches and wagons, &c.

There are in Shrewsbury, Wellington, and other Shropshire towns, or in the vicinity of towns, thirty-two coach and carriage-builders, many of whom add the trade of wheelwright to the more important one of carriage-building ; there are also wagon works at Shrewsbury, carried on by the Midland Railway Carriage and Wagon Works, and at Ludlow by the Birmingham Wagon Co.

Boat-building is carried on at Shrewsbury near the English Bridge by Mr. R. Ellis, who has quite a fleet of boats of his own construction on the river ; at Bridgnorth by George Rushton ; and canal boats are built at Madeley by William Beard.

The firm of John Maddock & Co., Malleable Ironfounders, Great Western Works, Oakengates, which was established by Mr. John Maddock in 1870, has recently assumed much larger proportions and is steadily increasing. The firm has become well known throughout the country as producers of high-class malleable castings suitable for the engineering trades, and has attained a still wider fame for their crucible, cycle, and motor castings, which they supply to most of the leading manufacturing firms both at home and abroad. Another department of these works consists in the manufacture of malleable hobs, steel plate and toe tips, brass and iron shoe rivets, and a great variety of nails used in the manufacture of boots, as well as a number of other specialities, including 'Maddock's' patent and registered fuel economizers for grates. This industry finds employment for 300 hands.

Hickman & Son carry on the manufacture of cut tacks at their works in New Street, and the Starcut Nail Company are nail makers in Leonard Street.

Ironfounding has been carried on by the firm of Messrs. Gower & Sons at Market Drayton for about half a century. Here ploughs, cultivators, chaff-cutters, drills (these being a speciality of the firm), and many articles for agricultural and domestic use, are produced in great variety, giving employment to about thirty hands. In the same town Messrs. John Rodenhurst,

Limited, manufacture kitchen grates and ranges, and agricultural implements, also undertaking general casting. Forty hands are employed. At Whitchurch Messrs. W. H. Smith & Co. are similarly engaged.

At the beginning of the nineteenth century Horsehay was a busy iron-making centre worked by the Coalbrookdale Company, as we have seen, and down to 1850 and later puddling and the manufacture of bar and other wrought iron was carried on here to a great extent. Soon after this, however, on the ores becoming exhausted or too expensive to get, the blast furnaces, forges, and rolling mills ceased working.

Later on, i.e. in November, 1886, the works were taken over from the Coalbrookdale Company by a new firm under the name of the Horsehay Company, which was incorporated as a limited liability company on 6 November, 1900, with Mr. J. Simpson as managing director.

Besides being iron founders, the firm are now large manufacturers of steel and iron bridges, roofs, tanks, piers and other constructional work, turntables, lifting machinery, transporters, &c., principally for the Cape, Natal, and Ceylon Government Railways, the Indian States, Bengal, and North Western Railways; also for railway companies in South America and Mexico.

Piers have been made and supplied for the west coast of South America, for Jamaica, the northern coast of Spain and for other places. Another speciality is the manufacture of lifting machinery, winches and gear, principally for the 'Temperly Transporter.'

About five hundred men find employment here.

# CHAIN-MAKING

A group of ironworks, known as the Langley Field, Hinkshay, Dark Lane, and Stirchley Furnaces, which were in full blast in the early part of the last century, employing thousands of men, women, and youths, but which are now silent and in ruins, cannot be passed by without brief notice. With the group are associated the names of Thomas, William, and Beriah Botfield; whilst at the Stirchley Furnaces Gilbert Gilpin effected those improvements in chain-making which led to their substitution for hempen ropes, which had risen considerably in price owing to the war with Russia.[1] The invention was recognized by the Society of Arts, who presented Gilpin with a silver-mounted purse containing 30 guineas and a silver medal, both of which are now in the possession of Mrs. Wilcox, of Sunny Cliff, Ironbridge, whose father was a friend of Gilpin. In addition to this pecuniary recognition the society further expressed its approval of the invention in the then 'crisis of public affairs,' adding that the chains were more flexible than hempen ropes, and from their durability bore but a small proportion thereto in expense, and that they were applicable to all the common barrels and pulleys then in use, without requiring the least attention in either. The following is a contemporary account of the invention :—

The old oval linked chain, in use for common purposes from very remote times, had in it a twist, arising from the weld of the iron. Ropes used in mining and other operations were apt, by coiling irregularly, to slip, and consequently to break. To obviate the latter evil in chains, Gilpin caused grooves, cast in his iron pullies at a fire of just sufficient dimensions, to receive those links of the chain that work vertically, while those working horizontally, and what may be called the gudgeon part of it, were made to bear upon each side of the grooves. Barrels of cast iron were also provided, with *spiral grooves* of the same dimensions, at such a distance from each other as to admit the chain to *bed, without the danger of a double coil.* By these means the links were retained at right angles with each other, the only position for free and uniform motion. The links of the chains are made as short as possible, for the purpose of increasing their flexibility, and they are reefed perfectly free from twist in the pullies and on the barrels, for the same reason.

The paper in *The Mechanic*, from which we gather these remarks, says :—

When applied in blocks, the grooves in the pullies prevent the different folds of the chain from coming in contact, and render plates between them (as in the common way) totally unnecessary. The pullies are in consequence brought closer together, the angle of the fall from block to block considerably diminished, and the friction against the plates avoided. Brass guards, with grooves opposite to those in the pullies, are rivetted to blocks, to prevent the chain getting out of its berth from any accidental circumstance. This method of working chains was first put in practice at the ironworks of T. W. and B. Botfield, near Shiffnall; and employed in the working of cranes, capable of purchasing from ten to fifteen tons; in the working of the governor-balls of the steam-engines constructed by Boulton & Watt, and in the raising of coal and ore from the mines, for which purposes ropes have before been solely used. The chains, in all cases, have performed with the utmost safety, uniformity, and flexibility; so much so, that the prejudices of

[1] The Stirchley Ironworks are now utilized as the Wrekin Chemical Works, which have been removed from Wellington, and are carried on by Mr. Wilkinson and his son. The manufacture consists of wood naphtha, charcoal, tar, acetate of lime, &c.

the workmen against them are entirely done away, and the heaviest articles are hoisted with more ease and as great confidence of safety as with the best hempen ropes.

With a view of ascertaining the relative flexibility of ropes and chains, the friction, and power requisite to move certain weights, a table detailing experiments made with each is given. The paper then proceeds :—

Contrary to the general opinion, it also appears that chains are safer than ropes ; for it is an established axiom that those bodies whose fibres are most in the direction of the strain, are the least liable to be pulled asunder, and in the examination of the properties of a rope, we find that the strands cross the direction of the strain in undulated lines, and consequently prevent its uniform action thereon. A rope is subject to this inconvenience, even when stretched in a direct line, but more particularly so when bent over a pully, as in that position the upper section moving through a greater space than the under one, is acted upon by the whole strain ; and hence the frequent breaking of ropes in bending over pullies, from the double strain overloading the strands of which the upper section is formed. The links of a chain are subject to the tranverse strain, where they move in contact ; but as such strain is in proportion to the length of the bearing, it must be very trifling. All the links having axles of their own, *the chain moves simultaneously with the strain, and both are in consequence retained in continual equilibrio.* A chain in grooves will therefore sustain as great a weight when bent over a pulley, as it will in a direct line, and consequently is safer than a rope. A safe, uniform, and flexible method of applying chains in the working of machinery has long been a desideratum in the arts ; for they are but little affected by exposure to the weather, or the heat of manufactories, whilst either produces the speedy destruction of ropes. The discovery is of additional importance, as it substitutes a durable article for a very perishable one, and gives employment to our manufactories at the expense of foreign importations. The durability is at least six to one in favour of chains.

The paper further contains a description of a crane, illustrated by drawings, and then gives an account of improvements of machinery for raising coals, ore, mines, &c. ; also, the result of Mr. Gilpin's inventive genius. The steam engine was just then beginning to supersede horse labour in winding, as it is called. This had been accomplished either by a jack-weight drawn down an inclined plane, or by means of a machine called a gin. Four horses or less, as the case might be, were yoked to as many cross-pieces of wood fixed in an upright shaft passing at the upper end, through a barrel, sufficiently high for the ropes to clear the horses' heads. The same sort of thing may now be seen where depth of shaft is trifling or the work but temporary. Then coals and mines but a very short distance from the surface were reached.

The paper, clearly and ably written throughout, then proceeds :—

Although the method of working chains in grooves had been in use three years and a half at the time this paper was drawn up (1807), and T. W. and B. Botfield had nearly two thousand feet in daily motion at their manufactory ; yet not a single link had broken or the least accident occurred therefrom. The wear was so trifling, that it appeared the chains would sooner fail from oxidation than attrition, for although the machines for raising coal and ore from the mines are in use twelve hours in the day, the brown oxide of iron formed upon the links by exposure to the atmosphere, is seldom disturbed by the motion of the chain. It is probable, therefore, that in this manner of working, chains will last at least fifteen years ; but to be certain, it is taken at twelve in the subjoined comparative statements, which show that the expense of chain as cordage is not a fourteenth part of that of hempen ropes. And in this statement the superiority of chains is so far from being over-rated, that there is every probability the expense of them will be less than the twenty-fourth part of the hempen ropes. The method of folding wooden barrels with wrought iron tire does away with the necessity of cast iron ones, and may be applied to every wooden barrel now in use at a small expense.[2]

Gilpin up to this time had been in the service of the Botfields, who objected to his attention being divided between his duties to them and his chain-making unless he gave them a share therein, and he accordingly left them and set up for himself. A Welsh publication of 1814 thus announces the new departure :—

Gilbert Gilpin, Coalport, near Shiffnal, Shropshire, sells chains of the best Shropshire iron, which will raise upwards of a ton weight in general use, at 5*d.* per pound, or 3*s.* per yard. Upwards of eight thousand yards of pit-chains made by him are now in use in the mines and collieries of the Lilleshall Company, Shropshire, and the adoption of such an immense quantity at one concern is a proof of the efficiency of the article. They are also in use in the principal manufactories of England and America.[3]

Gilpin issued trade tokens, both silver and copper ; around the rim of one of the latter runs the legend : 'Gilbert Gilpin, Dawley, Shropshire, pays the bearer a halfpenny,' whilst in the centre is a finely-executed crest of a wild boar, with the date 1811. The reverse sets forth that he 'sells chains for pits, cranes, etc., of the best horse-nail iron at 5*d.* per lb.'[4] A silver token bears the same inscription, and is of the value of 1*s.*

The offer by William Reynolds of a prize of £50 for an improved form of pit-chains resulted in the invention by Benjamin Edge of a three-linked chain, which was successively manufac-

[2] *The Mechanic*, 1805.
[3] *The Cambrian*, 1814.
[4] Randall, *Coal and Iron Industries*, 12.

tured by himself, his son James, and the latter's successors, John and Joseph Edge.[5] The first flat chain contained iron pins, each running through seven links, four and three alternately, of five-sixteenths of square iron.[6]

The Coalport Wire Rope and Chain Works, Shifnal, are situated within easy distance of the town of Shifnal. They are owned and carried on by the firm of Edge & Sons, and are styled the 'Coalport Works,' Coalport being the name of the place where they were situated for upwards of three-quarters of a century, being first established there in the year 1798 by Mr. Benjamin Edge, the inventor of the flat link wood-keyed pit-chain, which superseded hemp ropes for winding in pits fifty years before wire ropes were adopted for this purpose. The present owners have carried the works on successfully in all branches of their manufacture for many years, and are now supplying many of the largest coal and other mines throughout Great Britain; also the mines of Spain, North and South America, Gibraltar, British North America, India, Australia, and other distant parts, including many of the great public works of this and other countries, such as the Severn Tunnel, Manchester Ship Canal, the great harbour works at Buenos Ayres, Rio de Janeiro, and the railways connected therewith. Besides the ordinary makes of wire ropes and chains suitable for mines and other engineering purposes, the firm is famous for its special make of flat ropes and chains.

[5] Randall, *Coal and Iron Industries*, 13. [6] Ibid. 14.

# FORESTRY

THE Domesday Commissioners adopted different plans for setting out the approximate size of the woods that grew on the different manors. One of the chief values of the woodland was that it served as a feeding-ground for the pigs of the villagers, supplying them in the autumn with acorns and beech-mast. Hence the estimate of the wood is stated in several counties by naming the number of pigs that it would sustain or fatten. In other counties the area of the wood is expressed by the number of swine given to the lord by way of pannage fee; every villein paying one out of ten, or sometimes out of a smaller number, to the lord for pannage privilege. The second method was to give the rough square measure of the woodland on the particular estate.

Shropshire is an exceptional county wherein these two methods are blended, the woodland of some manors being estimated by the swine, and of others by measurement. Out of the hundred or so woods of Shropshire, about seventy are gauged by swine, and about thirty by leagues (the Domesday *leuca* is probably a mile and a half) and furlongs. Where the estimate by swine is adopted, the formula used (peculiar to this county) is 'wood for fattening (*incrassand'*) so many pigs.' The wood at Longnor could fatten 600 swine, that of Kenley and one or two others 400, that of each of the Wenlocks 300, and that of Buildwas 200; but most of the woodlands only sufficed to fatten smaller numbers, such as 100, 60, 40, or less. At Hodnet and at Meresbury there were but small woods worth nothing. The entry of the woodland on the manor of Lake enables us to form some estimate of the amount of wood capable of fattening a certain number of swine, for it states that there was a wood of two leagues, sufficient to feed 200 swine.

No woods are recorded of immense size, for those of Morfe and Wyre in the south-east of the county were royal forests, and hence not entered; the woodland was generally distributed throughout the county, but there was naturally more in some parts than in others. Woods are entered on about one in four of the manors; in round numbers the Shropshire manors number 400 and the woods 100. The Domesday hundred of Witentreu (now Chirbury), on the south-west border, had sixteen manors, eight of which had a wood; contrariwise the hundred of Culveston (now Munslow), at the south end of Wenlock Edge, had only two woods on its twenty-eight manors. Condover Hundred had twenty woods out of fifty manors.

The Domesday Survey, as is well known, is practically silent with regard to the great forest districts reserved for royal sport and hunting, except in an incidental fashion, for by their very nature they were, as has been well said, 'alien to the chief object of the survey,' inasmuch as they could not be assessed on any general principle. It is, however, clear from other sources and from the very silence of Domesday, that there was in this county a very wide expanse of 'forest' land, not necessarily wooded save in parts, but land outside (*foris*)[1] the common law and subject to special laws, which preserved such tracts for the hunting of the king and his favourites.

There is but one park mentioned in the survey, namely that of 'Marsetelie' or Marsley. It is entered under the customs of Shrewsbury that when the king visited that town the sheriff sent thirty-six footmen 'ad stabilitionem' for so long as he remained there, but that for the park of Marsley he had to find thirty-six footmen for eight days. We should probably be right in supposing this to mean that the sheriff had to find beaters for the king when he went hunting at Marsley and in the adjacent forest of Stiperstones.[2] The modern Marsley is a place in Habberley parish, a member of the old manor of Minsterley.

The term *haia* or haye occurs with some frequency in the surveys of the counties of Salop, Hereford, Worcester, and Chester, but most often in Shropshire, where there are over sixty specified. On two manors, Churton and Stretton, there were five hayes each; on two others,

[1] This is a possible etymology of the term forest, adopted by Mr. Ballard in *The Domesday Inquest*, 168. At all events the word had no original connexion with woods. As to forest laws or customs, see Turner, *Select Pleas of the Forest*, an admirable work, or the shorter and more popular book, *Royal Forests* (Dr. Cox).

[2] See above, 'Domesday Survey,' p. 295; cf. Eyton, *Antiq. of Shrops.* vii, 46.

Wentnor and Worthen, four; on six, Betton in Hales, Caynham, Frodesley, Kempton, Longnor, and Whitchurch, three; on four, Alkington, Ightfield, Much Wenlock, and Little Wenlock, two; and one on each of the manors of Ackley, Burford, Burton by Wenlock, Corfton, Cotton, Gravenhanger, Hem, Loton, Marchamley, Myndtown, Petley, Rorrington, Sandford, Uppington, Wem, Wrentnall, and Wykey. The haye was an inclosure constructed for the purpose of the capture of game, usually for roebuck. These small deer used to abound in the woods and thickets of Shropshire. In one case, namely on Corfton manor, the survey expressly states that the haye was for the taking of roe-deer, *ibi est haia capreolis*[3] *capiendis*. At Lingen, Herefordshire, entered among the Shropshire returns, it is stated that there were three hayes for the like object.

The term haye was also used, particularly at a somewhat later date, for other forms of inclosure on a larger scale. Thus in Shropshire, among forest records of the thirteenth and fourteenth centuries, we often find references to the haye of Lythwood, or the haye of Wellington. From this use of the word, it may be assumed that the comparatively small forest areas of Lythwood and Wellington were fenced in, or at all events had at one time been inclosed. This was not the case with the larger forests, whose only bounds or limits were regulated by perambulations, that is by following the imaginary lines drawn from one stated point to another.[4]

It is scarcely too much to say that more than one-half of the county, including almost the whole stretch of Shropshire south of the county town as well as some parts to the north of it, was forest under the early Norman rule. The whole was for some time officially known as the Forest of Shropshire, after the same fashion as the Forest of Essex. There were two opposite natural reasons, as shrewdly suggested by Mr. Eyton, why so large a proportion of this shire was reserved as forest. The ancient vast woods of Wyre and Morfe, occupying the south-east of the county, were rich in game, the denser thickets affording ample shelter for the wild boar and the timid roebuck; whilst other parts, such as the long bleak ridge of Wenlock, and the two smaller though loftier ridges further west of the Longmynd and Stiperstones, were so little suited to agriculture that they might well be preserved as runs for the red deer.

The different forest tracts of Shropshire are so numerous and complicated in their nearness to one another, with occasional overlap, that it will be best to deal very briefly with each before giving more general facts, especially as one or two ceased at an early date to be technical forests, having been conveyed by the crown to subjects.

There was a large tract of land on the confines of Shropshire and Staffordshire comprising many hundreds of acres, known in early days as Brewood Forest. The only hint of it in Domesday is the entry under Albrighton that there was a wood on that manor capable of fattening 100 swine, which was then in the king's hands. Weston and Bishop's Wood formed the northern boundary of this forest; Brewood and Chillington the eastern; whilst Albrighton, Donington, and Tong were on the south and west.[5]

King John, whose itinerary shows three sojourns at Brewood, namely in 1200, 1206, and 1207, has left various record entries that refer to this short-lived forest. Immediately after his first visit to Brewood, namely on 10 April, 1200, John addressed a precept to the chief justices of the forest, forbidding them to hinder the bishop of Coventry in the inclosing of a park in his wood at Brewood, for which park, which was to be three miles in circumference, the bishop held the king's licence.[6] Four years later, when the king was at Bridgnorth, he issued a charter declaring in the most explicit terms that he altogether disafforested his forest of Brewood.[7] In February, 1206, John informed Hugh de Neville, the forest justice, that he had granted to the bishop of Chester licence to make a deer-leap (*saltatorium*) in his park of Brewood towards the forest, and that Neville was to offer no hindrance.[8] As Mr. Eyton suggests, it would appear from the tenor of this instrument that 'the former charter was not yet in full operation.' The king's retention of his forest rights, notwithstanding the charter of 13 March, 1204, becomes much more apparent at the holding of the Pleas of the Forest for Shropshire in March, 1209. It was then enrolled by the justices that the knights and men of Brewood in Shropshire gave the king 100 marks to secure the disafforesting of that part of Brewood Forest for themselves and their heirs.[9] From that date Brewood Forest ceased to exist, and

[3] *Capreolus* is the invariable term in old forest rolls for the roebuck.

[4] Thus in Derbyshire it would have been absurd to style the great stretch of the Peak Forest a haye; but the word is found applied two or three times to Derbyshire's second and far smaller forest, namely that of Duffield Frith, which we know was a considerable inclosed area, containing within the great ring fence several smaller parks.

[5] Eyton, *Antiq. of Shrops.* ii, 185.

[6] Chart. R. 1 John, m. 25 *d.*

[7] Ibid. 5 John, m. 10.

[8] Close, 7 John, m. 4. The deer-leap was an arrangement in a park fence whereby the outside deer could readily leap within, but were not able, through a sinking in the ground, to return. See Cox, *Royal Forests*, 56, 330 (illust.).

[9] Forest Proc. Exch. T.R. No. 144.

the district came under the ordinary law of the land. True, a precept of King John of July, 1213, authorized the archbishop of Dublin to take thirty bucks in the park of Brewood, but the order was made on the wardens of the then vacant see of Coventry, from which it is clear that the deer were to be supplied from the episcopal park.[10]

As to the forest of Morfe, Mr. Eyton points out that where the counties of Salop, Stafford, and Worcester now converge there was once a great region of forest stretching away for miles eastward and westward in the valley of the Severn, which was then a land-locked and sluggish stream; it was a region known to the Britons as *Coed*, or forest, and was the essential forest of this part of England.[11] The forests of Morfe, Kinver, and Wyre in those early days formed but one continuous wild district. When Morfe emerged from close fellowship with its neighbours it formed a forest of about eight miles in length by six in breadth. Its northern boundary rested on the Worf, a tributary of the Severn, and its south-western limit seems to be determined by its name, which was taken from the Staffordshire village known as Morfe.

When the sheriff and knights reported as to Morfe Forest in 1235, they found that the wood of Claverley, which was in the keeping of Hugh son of Robert, forester of fee of the whole county of Salop, was well kept both in wood and underwood, except that the latter was damaged by goats; that the wood of Worfield was much wasted at the time of the barons' war and again in the time of Ranulf earl of Chester (sheriff of Salop 1216–23), who sold 1,700 oak trees during his shrievalty, and also through supplying timber for the fortifying of Bridgnorth.

Wyre Forest was at one time so vast a district that it gave its name to a whole county; for Worcester, or Wyreceastre, was a Roman station in this forest. But its aspect had greatly changed in the days when Norman forest rule was established. It spread in an unbroken sweep along the Severn down to Worcester; a portion of it remained in the shire to which it gave its name, but the more important and best wooded section was in the south of Shropshire. Eyton sets forth sound reasons for believing that the Shropshire parts of old Wyre Forest, pertaining to the great manor of Cleobury and Kinlet, were crown property in Saxon days; but that they subsequently passed to William earl of Hereford, and thence to Ralph Mortimer. The forest rule that the Mortimers strenuously endeavoured to maintain points convincingly to its having been originally under kingly jurisdiction. When Prince Edward embarked for Palestine in 1270, the forest or rather the chase of Wyre was fenced for miles to prevent any depredation of the deer in the adjoining cultivated districts; but Roger de Mortimer took occasion of his powerful position and of the slackness of the rule of Henry III to enlarge his rights as though royal, and flung down more than two leagues of this fence to allow free transit to the deer, to the great havoc of the county.[12]

The great area termed the Long Forest doubtless took its name from that continuous ridge or terrace which extends for some fifteen miles from Halford on the south-west to Much Wenlock on the north-east, and which is now usually known as Wenlock Edge. This forest extended a considerable distance on both sides of the Edge; it embraced the whole of the Domesday hundred of Condover save three manors, and large portions of the hundreds of Patinton, Calveston, Lentewrde, Rinlau, and Ruesset.[13] The survey of Shropshire forests in 1235 supplied brief returns as to the state of a large number of woods which were subject to the jurisdiction of the Long Forest. Westwood, belonging to the prior of Wenlock, which was at the north-eastern extremity of the ridge, was well kept as regards underwood and thorn, and nothing else grew there. Easthope had well-kept underwood and a little oak. 'Langsetewud,' belonging to the priors of Wenlock, had well-kept oak and underwood. The small wood of Plaish had a little oak, Oakwood had long been stripped of oak and underwood, and 'Mullesgreve' was in the like plight. The report is favourable as to both oak and underwood of Middlehope, Westhope, and Corfton. Of Highwood, which was a part of Wenlock Edge, between Rushbury and Eaton, it is stated that the oak and hazel were well warded, but that the underwood was not increasing; and a like report was made of the wood of Hope Bowdler. After detailing the conditions of various other woods, Mr. Eyton comes to the conclusion that there were only three hayes or royal preserves which were at that time (1235) kept intact within the vast jurisdiction of Long Forest, namely Lythwood, Bushmore, and Haycrust.

Another forest of considerable extent was that of the Wrekin; it was usually known in the twelfth and thirteenth centuries as the Forest of Mount Gilbert. How the Wrekin acquired the name of Mount Gilbert is a question which will probably never be satisfactorily answered.[14] Although the outstanding hill of the Wrekin naturally gave the original name to this forest, it was not the central object. The jurisdiction of this forest district of the Wrekin or Mount Gilbert lay

[10] Close, 15 John, m. 3. [11] Eyton, *Antiq. of Shrops.* iii, 212–19. [12] Ibid. 276–9.

[13] The jurisdiction of this forest at different periods is set forth with much particularity in Eyton, *Antiq. of Shrops.* vi, 335–46.

[14] Eyton failed in his endeavours to obtain a solution (*Antiq. of Shrops.* ix, 143); two or three vague guesses seem scarcely worth citing.

solely on the eastern side of the Severn. It embraced nearly the whole of the Domesday hundred of Recordine and extended into the liberties of Shrewsbury ; it also overlapped into Staffordshire at Sheriff Hales. Various records of the reign of Henry III show that this forest was divided into two sub-jurisdictions, namely the bailiwick of Haughmond and the bailiwick of Wombridge.

The Shropshire Forest roll of 1209[15] subsequently cited gives two regards or surveys of Mount Gilbert, wherein are set forth the assessments or fines set on persons or places for encroachments within the jurisdiction. Among places named which can be identified are Arleston, Calvington, Dawley, Drayton, Eyton Abbots, Haughton, Hales, Horton, Idshall, Kemberton, Ketley, Lawley, Lee Gomery, Leighton, Pinley, Priorslee, Tibberton, and Wombridge.

The 1235 survey of Shropshire woods certifies as to the condition of the woods of Albrighton, Astley, Harlscott, Haughmond, Haughton, Pinley, Roden, and Upton Magna in the bailiwick of Haughmond ; and Great Dawley, Eyton upon the Weald Moors, Idshall, Kemberton, Lilleshall, Lizard, Sheriff Hales, Stirchley, Sutton Maddock, Weald Moors, and Wrockwardine in the bailiwick of Wombridge. The regarders also testified that they had surveyed all the woods of the haye of the king at Wellington in Mount Gilbert jurisdiction, which were well kept in oak and underwood, except the little wood of Uppington, which was of old time laid waste. In these woods there were but few deer. It thus appears that the haye of Wellington, as Mr. Eyton says, was the only royal preserve then maintained in the jurisdiction of Mount Gilbert.[16]

The great and final perambulation of 1300 gives a full account of the parts of this once extensive jurisdiction which had been abandoned under the dilatorily fulfilled obligations of the Forest Charter of Henry III, as well as the exact boundaries of the haye of Wellington, which was all that was retained as royal forest.[17]

The Forest of Shirlott (Sherlot, Sherlet, Schirlet, &c.) was originally of great extent. The place that gave it its name lies a few miles to the south-east of Much Wenlock. But there must have been considerable confusion as to the respective bounds of this forest and of the Long Forest and Morfe Forest, between which it was situated. Regards and presentments during the thirteenth century name certain places as pertaining, at different dates, to all three of these forest divisions.

One of the royal forest districts of this county which was conferred on a subject, and hence became a free chase, was the Forest of Stiperstones, a ridge or edge to the west of Wenlock Edge. It was granted by Henry II to Roger Corbet and restored and confirmed to his nephew Robert Corbet by Richard I in 1190.[18] About a century later, Peter Corbet's right to have free chase in Hampton Howell and various other lordships was questioned, but he succeeded in maintaining his right to most of them by producing the charter of Richard I by which he was held free of any forestage or exaction which had formerly pertained to the king's forest of Stiperstones.[19]

The Forest of Clee is considered by Eyton [20] to have been appurtenant to Ditton, a manor of the Mercian earls in pre-Conquest days. In the days of Henry II, Hugh de Periers had it from the king, together with Ditton, Corfham, Culmington, and Siefton. When, however, Henry II granted Ditton to Wenlock Priory, and gave Corfham, Culmington, and Siefton to Walter de Clifford, the forest was detached from the manor of Ditton, and bestowed on the Cliffords under the name of the Haye of Les Clives, as an appurtenance of the more distant manors. Herein did the Cliffords exercise certain rights which ordinarily belonged to royal forests.

In Trinity term, 1276, John Giffard and Matilda his wife impleaded many persons for hunting in their forest of Corfham.[21] In 1253 Walter de Clifford sued William Mauduit and two others for taking a boar in the forest of Corfham.[22] In February, 1280, John Giffard of Bromfield obtained a grant for life to run deer, started in his chase of Corfham, through 'La Longeforest' or other parts of the king's forest of Shropshire on the same day that they were started.[23]

A roll of the amercements of Shropshire forests, shown by internal evidence to belong to 1179, gives £12 14*s.* 6*d.* as accruing to the crown from these fines or acknowledgements, in sums varying from a mark to sixpence. The abbey of Lilleshall paid a mark for a mill within forest bounds. The great majority of the fines were for purprestures or encroachments, such as building houses, &c., or for assarts or inclosures of waste within a forest and cultivating the same. The crops raised on the latter are specified as wheat, rye, or oats ; the two former paid 1*s.* an acre and the last 6*d.* On the same roll is entered the sale of the king's lead obtained within the forest, which amounted to the considerable sum of £55, the other issues of the forest yielding £45 10*s.*[24]

[15] Forest Proc. Exch. T.R. No. 144.
[16] Eyton, *Antiq. of Shrops.* ix, 144–6.
[17] These particulars are set forth in full by Eyton, ibid. 147–8.
[18] Eyton, *Antiq. of Shrops.* vii, 12 ; also xi, 100–1, 110, 111, 134.
[19] *Quo Warranto R.* 685–6.
[20] Eyton, *Antiq. of Shrops.* v, 196–202.
[21] *Abbrev. Plac.* (Rec. Com.), 190.
[22] *Plac. Coram Rege*, 38 Hen. III, m. 9 *d.*
[23] Pat. 8 Edw. I, m. 23.
[24] Forest Proc. Exch. T.R. No. 143 ; Pipe R. 26 Hen. II.

# FORESTRY

Pleas of the Forest were held at Shrewsbury on 14 March, 1209, before Hugh Neville and Peter de Lion. This is one of the earliest extant records of such proceedings.[25] The purprestures and assarts are enrolled at length, with the fines exacted. Twenty-two cases of vert fines (*amerciamenta de viride*) are set forth in sums varying from one to five shillings; it is then stated that many other cases were named on another roll, the whole sum amounting to £7 9*s*. By far the heaviest venison fine was that of sixty marks imposed on Roger Purcel and others. A singular case came before the justices at this eyre. A hart entered the bailey of Bridgnorth Castle; the guards took it and carried it into the castle. When the news reached the forest verderers they demanded of Thomas de Erdinton, the sheriff, who was in charge of the castle, what had been done with the hart. He acknowledged the offence and promised that his men should appear before the justices, and the town of Bridgnorth was attached for this violation of forest law. Thomas de Erdinton was sheriff of both Shropshire and Staffordshire through much of John's reign, and was also in high favour with the king; that the local forest ministers were able to call such a man to account is a proof of the stringency with which forest laws were carried out at that period.

Another interesting case at this eyre involved the question of sanctuary. It is thus set forth on the roll, according to the translation given by Mr. Turner:—

> Richard of Hotton, Wilkin of Eastlegh, Hulle of Hinton and Hulle Roebuck, the serjeants of the county, found venison in the house of Hugh le Scot. And Hugh fled to the church and when the foresters and verderers came thither, they demanded of Hugh whence that venison came. And he, and a certain other person, Roger of Wellington by name, acknowledged that they had killed a hind from which that venison came. And he refused to leave the church, but lingered there for a month, and afterwards escaped in the guise of a woman. And he is a fugitive, and Roger of Wellington likewise. It is ordered that they be exacted; and unless they come let them be outlawed.

The regard or survey of the forests of Morfe, Shirlott, Long Forest, and Mount Gilbert or the Wrekin were laid before the justices at this eyre.

In February, 1215, King John ordered that Hugh de Mortimer was to be allowed to take two hinds for his own use in the forest of Morfe, and two other hinds for his mother.[26]

Certain royal timber gifts from this forest by John's successor may be here chronicled. Henry III in 1220 licensed Robert de Lexinton to take within his wood of Morfe reasonable estover for inclosing his haye and repairing his houses.[27] In 1223 the king directed Hugh son of Robert, the forester of Shropshire, to give twelve cart-loads of dry wood out of the wood of Morfe to the brethren of the hospital of St. John of Bridgnorth.[28] In the following year the king granted for his life to the leprous brothers of St. James, Bridgnorth, the privilege of a horse-load daily of dry brushwood or dead wood out of the forest of Morfe.[29] In 1226 Hugh the forester was instructed to supply three 'roers'[29a] for fuel to the leper hospital of Bridgnorth, and the same to the Bridgnorth hospital of the Holy Trinity.[30] A further royal donation of firewood out of the forest of Morfe was made to the leper hospital of Bridgnorth in 1231.[31]

In July, 1219, the crown issued instructions to the sheriff, verderers, and foresters of all counties containing royal forests to hold an inquest on oath as to all assarts or cultivations of ground within forests that had been inclosed or tilled since the first year of the king's coronation without due warrant. The names of the special inquisitors for Shropshire were Vivian de Russale, Warner de Wilele, Robert Corbet or Thomas his son, with John Extraneus (Le Strange) junior as clerk. The place of meeting was to be at Shrewsbury.[32]

King John had been compelled to agree in 1215, by one of the articles of Magna Charta, to the disafforesting of all tracts of country which had been made forest during his reign; and soon after the child-king Henry III ascended the throne the Charter of the Forest was issued, by which it was provided that all which Henry II had afforested was also to be freed save what was royal demesne. In accordance with this charter special perambulations were ordered to be made by twelve knights in every county where there were forests, before March, 1224–5.

[25] Forest Proc. Exch. T.R. No. 144. The record of these pleas consists of four closely-written membranes in good condition. The more important parts are transcribed and translated in Mr. Turner's *Select Pleas of the Forest.*

[26] Close, 16 John, m. 8.

[27] Ibid. 4 Hen. III, m. 8.

[28] Ibid. 7 Hen. III, m. 16.

[29] Ibid. 8 Hen. III, m. 4.

[29a] Roer, a term which occurs in various forest proceedings, is the English form of *robur*. *Robur* and *quercus* are often entered in wood-sales and other forest accounts with obviously different meanings attached to the two terms.

[30] Close, 10 Hen. III, m. 6.

[31] Ibid. 15 Hen. III, m. 12.

[32] Pat. 3 Hen. III, m. 4 *d.*

At the Public Record Office is a single closely-written membrane, somewhat illegible, in a hand of the reign of Henry III, which appears to be a summary of the Shropshire knights' return of this date.[33] A list is given of the names of vills of the haye of Lythwood which were to be disafforested; among those which can be readily identified are Berrington, Condover, Cantlop, Great and Little Lye, Westley, a certain part of Pulley containing twelve virgates, and a certain house at Welbatch. As to Morfe Forest, the parts to be disafforested included Gatacre, Sutton, and the plain beginning at the old ditch by Quatford and extending itself by the bank of the Severn to the head of a certain croft at 'Pendelesston.' The vills which were to remain in Morfe Forest included Quatford, Bromley, Burcott, Hoccom, Rulpton, Wyken, Hilton, Wilcott, Claverley, &c. These disafforested parts of the haye of Shirlott included Buildwas, Willey, Bold, Caughley, Apley, Astley Abbots, Tasley, Croft, Aldenham and Great Wenlock, with the adjoining vills of Barrow, Benthall, and Posenhall; also the wood of the Earl of Arundel, which was within the bounds of Shirlott Forest and called Earlswood, Aston Eyre, Criddon, Holicott, Faintree, &c. Among the disafforested vills of the haye of Wellington were Little Buildwas, Little Wenlock, Linley, Clotley, Dawley, and Madeley.

The last part of this return shows that at one time almost the whole of the two ridges to the west of the great ridge of Wenlock, namely the Longmynd and the Stiperstones, together with the intervening parts, was under forest rule. The townships of the 'forest de Stepelwade' that were disafforested included those of Stapleton, Netley, Church Pulverbatch, Smethcote, Picklescott, Leebotwood, and half of Longden. Among the disafforested parts of the 'forest de Muneton' were Acton Scott, Wistanstow, Wollaston, Ratlinghope, 'La Munede' (the Longmynd), and the wood of the bishop of Hereford called Aston. The final entry is as to the haye of Bushmoor and 'Hakehurst' or 'Haycrust'; Rackett Hill, a wood called Evenwood, and the manor of Stretton were separated from this haye and removed from forest control.

But this extensive scheme of disafforesting was not allowed to stand undisputed by the crown. In the case of six counties, of which Shropshire was one, the perambulations of the knights under the Forest Charter were in 1228 formally declared to be faulty and made *per ignorantiam et errorem*.[34] John de Monmouth, in the following year, was entrusted with the wardenship of the forest of Shropshire, at pleasure, together with a like office in several adjoining counties.[35] In the same year a full 'regard' of Shropshire Forest was taken, under the long set of interrogations termed the chapter, which covered almost every possible particular as to the condition of forest demesnes.[36]

A great storm devastated England early in December, 1222. The gale caused the uprooting and overthrow of so much timber that the ordinary customs of dealing with the cablish or windfallen wood (for the most part it was the perquisite of the forest ministers) were suspended, and the crown immediately issued orders to the verderers and foresters to take an inventory of the wood blown down and to await further instructions. Commands to this effect were sent to the verderers and foresters of the Forest of Shropshire collectively on 6 December, and a like communication to Hugh son of Robert as warden of that forest.[37]

In 1232 the prior of Wenlock obtained a substantial gift from the crown of prepared roof timber, as well as fifteen oaks for making boards, for the work of the conventual church, from the wood of Hawkhurst and from Lythwood. In the same year the king granted thirty oaks out of Lythwood to the church of the Dominican Friars at Shrewsbury and ten oaks from the same forest for the works at the church of St. Chad, Shrewsbury.[38] About the same time a grant of four oaks was made to the prior of Wenlock out of the royal wood of Shirlott, to roof the chapel of St. Mary, and a general one of all the timber that was necessary to repair the king's houses and the gaol of the castle at Shrewsbury out of any of the forests of Shropshire.[39] In 1233 Richard de Muneton obtained a gift of ten oaks out of Haycrust Forest, the sheriff thirty-five oaks out of Lythwood for the works at Shrewsbury Castle, and the abbot of Shrewsbury ten oaks in Lythwood and ten in Shirlott to rebuild certain houses that had been recently burnt.[40]

In 1246 Henry III appointed, during pleasure, Geoffrey son of Warin to the custody of the forests of the three counties of Salop, Worcester, and Stafford; mandates were issued to the verderers and foresters to be intendent unto him as the king's steward thereof.[41] The inquisitions held in the various hundreds of Shropshire before the justices in 1255 contain various matters relative to the forests and wood.[42]

Robert the forester of Wellington held lands of the king for warding the haye of Wellington. The draught cattle of that manor had the right of entering the haye, save during the fence month and from Michaelmas to Martinmas, and the pigs on a pannage fee of 2*d.* for the whole year and 1*d.*

[33] Forest Proc. Exch. T.R. No. 148. [34] Pat. 12 Hen. III, m. 5. [35] Ibid. 13 Hen. III, m. 2.
[36] Ibid. m. 9 *d.* As to the Regard, see Cox, *Royal Forests*, 10-11, 38-40. [37] Pat. 7 Hen. III, m. 6.
[38] Close, 16 Hen. III, m. 10, 9, 6. [39] Ibid. m. 6.
[40] Ibid. 17 Hen. III, m. 3; 18 Hen. III, m. 34, 32. [41] Pat. 30 Hen. III, m. 6.
[42] *Hund. R.* (Rec. Com.), ii, 55–86.

for the half-year, the small pigs free. Robert had the after-pannage, the dead wood, and all oaks overthrown by the wind up to five trees, but if there were more than that number overthrown (in a single storm) they belonged to the king. The forest also claimed all wind-fallen boughs. In the same haye were two lime-kilns for the works of the king, for one of which 300 oaks had been burnt and 200 for the other. John son of Hugh held the manor of 'Bowlewas' by serjeanty, as chief forester of the whole forest of Shropshire. Ralph Marshall, forester of the haye of Lyth, claimed the after-pannage. The jury reported two men for having sold underwood and oaks in this haye, but they knew nothing of any venison poachers.

Thomas de la Mar', forester of Long Forest, according to the answer of the jurors of Munslow Hundred, kept no goats of his own in the forest, but he allowed others to keep them in their own woods within the forest according to old use, except in the fence month.

The jurors of Stottesden Hundred complained that the foresters of Sir Walter de Clifford claimed from every householder within the bailiwick of La Cleye a hen at Christmas and five eggs at Easter, and also collected wheat-sheaves from various vills within the baily.[43]

The pleas of the forests of Shropshire, held at Shrewsbury on the morrow of the feast of the Purification, 1262, are also extant.[44] It appears that no pleas had been held for more than ten years. The rolls open, as usual, with the *essoins* or excuses for non-attendance. The list of *essoins* of death, that is of those summoned who were deceased before the holding of the eyre, actually amounts to upwards of 250 names; in each case the death had to be testified by a relation or other person appearing before the justices.

The presentments for venison offences show that the red deer largely predominated at this time in the forests of Shropshire. Charges were heard concerning the illicit killing of twenty-two harts, two brockets (harts of the second year), nine hinds, and one hind-calf; there were also three cases as to roe-deer; but among fallow deer there were but two does and one buck.

The presentments for vert offences numbered 565. The fines imposed varied between one and two shillings, but reached three shillings in a single case. In fifty-two cases the justices excused fines on the score of poverty. Forty-five of those charged were able to prove an alibi. A considerable number of those thus presented had died since the alleged trespass, and in one or two cases it was stated that the delinquent had fled.

Among the royal charters of forest privileges presented at these pleas to the justices and enrolled were those of the abbey of Haughmond, of the priors of Wenlock and Bromfield, and of the hospitals of St. John the Evangelist and St. James, Bridgnorth.

A list is set out of those who kept dogs[44a] within the forest without licence. There were twelve presentments for this offence. In one case the heavy penalty of twelve marks was imposed, in another twenty shillings, and in two others two shillings each.

After an interval of ten years, namely in 1272, forest pleas for the county were again held at Shrewsbury, before Roger de Clifford and two other justices.[45] Geoffrey de Pycheford was present as steward of the whole forest of Shropshire and John Fitz Hugh as chief forester, together with various sub-foresters and five verderers. The fines for vert offences, which numbered about 350, were somewhat heavier than at the last eyre, several delinquents being fined three shillings and one four shillings. A case in which there had been considerable sale of timber was dealt with much more severely than in the usual instances where tenants had taken growing wood without warrant for their immediate use; for this offence Thomas Tuchet was fined 20*s*., although the wood whence the timber was taken was his own property.

The venison presentments at this eyre from the different forest districts, such as the Long Forest, Shirlott, Mount Gilbert, and the haye of Lythwood, were exceptionally numerous. In addition to various charges against persons for being common poachers (*consueti malefactores*), there were definite presentments concerning the hunting and taking of thirty-four hinds, thirty-two harts, a brocket, two hart-calves, twelve roe-deer, and four bucks.

At the inquests of 1274 the jurors of the same hundred complained that the constable of Corfham compelled all the vills within his lord's free chase of Clee to attend and hold pleas of the

[43] *Hund. R.* (Rec. Com.), ii, 83.

[44] Forest Proc. Exch. T.R. No. 145. These records are full and in good condition.

[44a] Some interesting particulars of the hounds maintained at Cleobury Mortimer appear in the Mins. Accts. (bdle. 965, No. 10) for 1328 :—'Bread for 26 harriers, from Martinmas to the feast of St. Thomas the Apostle, 45*s*. 6*d*. Bread for 60 hounds of the pack (*canibus mote*, equivalent to *canes currentes*, see Turner, *Select Pleas of Forest*, 138), besides bran, 14*s*., namely 4*d*. each day. For 15 qr. 6 bs. of oats bought for the said hounds, namely for bran, 47*s*. 3*d*., namely 3 bs. every night (apparently the hounds had a meal of coarse bread in the day and another of bran, probably in the form of a mash or porridge, at night). . . . For litter for the said hounds and men with pages (*pagis*) guarding them, 6*s*. 8*d*. For carrying brushwood to make the bran and food (*past*') for the hounds, 8*s*. Wages of a woman drying 36 qr. of oats for bran, 9*d*.'

[45] Forest Proc. Exch. T.R. No. 146, 147.

chase (or swainmote courts) every six weeks, a thing which had never been done until within the last four years. He had also placed four or five deer-keepers where there used to be but one, at the cost of the county; nor would he permit the lords of any manor to take aught from such proper woods if they were within the chase. Other special trespasses were alleged against John de la Watere, as constable of the Cliffords. The jurors protested that the whole county round the chase of Clee was being ruined by these extortions.[46]

Order was given by Edward I in April, 1274, to the sheriff of Shropshire to cause all the venison taken in the forest for the king's use to be carried without delay to Westminster, there to be delivered to the keepers of the king's larder.[47]

Bridgnorth was the usual gaol for the forest offenders of Shropshire, though they were sometimes committed to the castle of Shrewsbury. Thus in 1280 Edward I directed Roger de Clifford, justice of the forest on this side Trent, to release Roger de Besselawe, imprisoned at Bridgnorth for trespass in the forest of Shirlott, to twelve men who were to give bail for his appearance at the next forest pleas held in the county.[48]

A crown licence was issued in 1279 to Adam Attewell and those whom he took with him, to take foxes throughout the forest of Shropshire, by traps or other means, and to carry them away.[49]

Two years later, in November, 1281, Roger de Mortimer obtained licence to hunt the fox and the hare with his own hounds in all the forests of Shropshire, outside the coverts, until the following Easter; provided he took none of the king's great game or deer (*de grossis feris*).[50]

It is of much interest to note that wolves at this period were still to be found in the forests of Shropshire and the adjacent counties. In 1281 Peter Corbet obtained letters patent authorizing him to take wolves, by the aid of man, dogs, or traps, wherever they could be found in Shropshire, Staffordshire, Gloucestershire, Worcestershire, and Herefordshire, and all bailiffs and ministers of forests were to give him the assistance he required.[51]

In July, 1284, Edward I warned the forest ministers of the county not to interfere in any way with the bishop of Bath and Wells in obtaining timber for the construction of his manor-house at Acton Burnell, nor were they to molest him in taking deer in the forest.[52] In 1286 Edward I licensed Robert Burnell bishop of Bath and Wells, and Hugh Burnell his brother, in consideration of services which the bishop had rendered him from his earliest years, to fell and take away to his manor of Acton Burnell whatever great or small timber they required in their woods of Condover, Wolstaston, Frodesley, Hope Bowdler, Corfton, and Rushbury, which were all within the bounds of the forest of Shropshire.[53]

The gifts of timber from different parts of the forest of Shropshire, but more especially from the bailiwick of Shirlott and from Lythwood, occurred with some frequency during the reign of Edward I. The keepers of the works of the recently burnt church of St. Chad, Shrewsbury, received four oaks from the king's haye of Lythwood in 1276.[54] Two years later Henry de Penebrugg obtained ten oaks and Thomas bishop of Hereford six oaks from the same wood.[55] From Lythwood, also, four oaks were granted to the abbot of Shrewsbury in 1282;[56] three leafless oak trunks for fuel to the abbot of Westminster, in the same year;[57] thirty-eight oaks for the repair of the hall, chambers, &c., of Shrewsbury Castle in 1288–9;[58] and twenty oaks to Robert de Radeswell archdeacon of Chester in 1292.[59]

The bishop of Bath and Wells was empowered in 1273 to have fifteen good timber oaks from any haye or wood within the king's forest of Shropshire.[60] Eight oaks were granted to the same bishop, when he was chancellor, out of the king's woods of Bismore and Hawkhurst, both within the forest.[61] From the wood or forest of Shirlott, in Acton Round parish, the same bishop received two oaks in 1280;[62] the Franciscan Friars of Bridgnorth six oaks in 1282;[63] John de Bridgnorth six oaks in 1283;[64] and 'Burga de Willeleye' two oaks in 1285.[65]

The entries of royal gifts of game in the first twenty years of the reign of Edward I show that roe-deer abounded in Shropshire at the close of the thirteenth century and that there was a good

[46] *Hund. R.* (Rec. Com.), ii, 108, 110.
[47] Close, 2 Edw. I, m. 9.
[48] Ibid. 8 Edw I, m. 1.
[49] Pat. 7 Edw. I, m. 6.
[50] Pat. 10 Edw. I, m. 22.
[51] Pat. 9 Edw. I, m. 28. On the subject of the survival of wolves in the British Isles, see Cox, *Royal Forests*, 32–4. In 1281 a wolf killed a fat buck on Cannock Chase, Staffs. It is supposed that the last English wolf perished in the time of Henry VII. The last wolf is said to have been killed in Scotland in 1743. Packs of Irish wolves were not exterminated until 1710, and the last solitary survivor was killed in 1770.
[52] Pat. 12 Edw. I, m. 7.
[53] Pat. 14 Edw. I, m. 19.
[54] Close, 4 Edw. I, m. 8.
[55] Ibid. 6 Edw. I, m. 8, 7.
[56] Ibid. 10 Edw. I, m. 4.
[57] Ibid. m. 1.
[58] Ibid. 16 Edw. I, m 7, 3; 17 Edw. I, m. 3.
[59] Ibid. 20 Edw. I, m. 1.
[60] Ibid. 11 Edw. I, m. 8.
[61] Ibid. 19 Edw. I, m. 4.
[62] Ibid. 8 Edw. I, m. 9.
[63] Ibid. 10 Edw. I, m. 4.
[64] Ibid. 11 Edw. I, m. 6.
[65] Ibid. 13 Edw. I, m. 10.

supply of red-deer. In 1274 the king ordered John son of Hugh, as keeper of the Long Forest, to cause the bishop of Bath and Wells to have two harts out of that forest.[66] Out of the same forest a hart was granted to Roger Sprenghose, in 1281;[67] four harts to Roger Lestrange, in 1282;[68] and three harts to Gilbert de Clare earl of Gloucester, three harts to John Giffard, and four harts to Roger de Clifford, in 1283.[69] In 1281 Gilbert de Clare had ten harts in the forest of Shropshire, the special place not being particularized.[70]

As to roe-deer, Thomas Corbet obtained royal licence in 1283 to have out of the forest of Shropshire six live roebucks; they were to be taken in the places which should seem most expedient to the keeper.[71] In September of the same year the chancellor (bishop of Bath and Wells) was empowered to take ten roebucks in Shropshire Forest, against the time of the king's arrival at Acton Burnell.[72] In September of the following year the forest warden was ordered to supply the bishop with three roebucks and two harts, against the coming of the king's children to Acton Burnell.[73]

On the other hand twenty-four live roe-deer were introduced into the Long Forest, Shropshire, from Hampshire, in 1281, to help to stock that forest with these small deer.[74]

The great perambulation of the Shropshire forests, which held good so long as forest law was maintained and which settled the disputes as to their intricate boundaries that had prevailed throughout the thirteenth century, was completed on 6 June, 1300, and ratified on 14 February, 1301. These bounds need not here be repeated, as they have been fully set forth by Mr. Eyton.[75]

Owing to the inconvenience caused by the irregularity with which pleas of the forest were held and the cumbersome process connected with such sessions, some relief was gained in the reign of Edward III by the holding of definite inquisitions from time to time as to the state of forests under a forest justice. A bundle of the originals of such Shropshire inquisitions, with the small seals of the jurors attached to parchment tape, is extant at the Public Record Office.[76] They are five in number. The earliest is of the year 1363, when an inquest was held at Bridgnorth, wherein particulars are given as to the pannage and underwood; two others, of the years 1365 and 1366, chiefly refer to alleged delinquencies of abbots of Shrewsbury; and a fourth was held at Condover in 1366. The fifth and most important was held at Bridgnorth in 1374, before John de Foxle, warden of the forests this side Trent, as to the forests of Morfe, Shirlott, and Lythwood.

Strictly speaking, forest regards had to be taken every three years, and there are full regards extant of the forests of Morfe and Shirlott for 1358 and for 1361.[77] The last of these, which covers four membranes, begins with recording a new assart in Shirlott of 2½ acres by the priory of Worfield, which was a cell of the abbey of Shrewsbury. The second entry relates to an old purpresture of two acres in Claverley, which had been twice sown in the winter and once in the spring (*bis in ivernagio et semel in trames*) since the last regard. A document of 1366 ought not to escape notice, as it is the roll of presentments of the Shropshire forests (Morfe, Shirlott, and the haye of Lythwood) of the celebrated William of Wykeham, as keeper of the forests this side Trent, just before he became bishop of Winchester. The holding of this lucrative office by this most distinguished pluralist is not noted by Wykeham's latest or other biographer; but among the twelve ecclesiastical benefices of which he was then in possession was the prebend of Alnethley, in the collegiate church of Bridgnorth, worth £23 6*s*. 8*d*. a year.[78] This document gives details of the disputes as to the damage done to the wood and game of Lythwood by Adam late abbot of Shrewsbury and by Nicholas the then abbot.[79]

There are but few record references extant as to the royal forest districts of Shropshire in the fifteenth century; they were gradually disappearing except in the wilder parts, before the various assarts, purprestures, or imbladements, which were tacitly encouraged because of the rentals or fines to the crown. There is, however, a roll of Forest Pleas for Morfe Forest held in August, 1497.[79a] Several charters of privileges were produced at this court, including a confirmation by Richard II of the right of the master of St. John the Baptist's Hospital in Bridgnorth to a horse-load of dead wood for fuel daily; as some set-off against this privilege, the hospital were bound to supply a meal every Wednesday for the forester in fee of the bailiwick of Worfield, according to Roger Parlour, who claimed that office as son of William Parlour and further claimed to have a meal every Saturday from the master of St. James's Hospital, Bridgnorth, and another on Friday from the keepers of Pendleton mills, as well as one loaf of eatable bread on St. Stephen's Day from every tenement of

[66] Close, 7 Edw. I, m. 5.
[67] Ibid. 9 Edw. I, m. 7
[68] Ibid. 10 Edw. I, m. 8.
[69] Ibid. 11 Edw. I, m. 7, 6.
[70] Ibid. 9 Edw. I, m. 5.
[71] Ibid. 11 Edw. I, m. 6.
[72] Ibid. m. 4.
[73] Ibid. 12 Edw. I, m. 2.
[74] Ibid. 10 Edw. I, m. 8.
[75] Eyton, *Antiq. of Shrops.* vi, 342–6.
[76] Forest Proc. Exch. T. R. No. 308.
[77] Ibid. No. 149, 150.
[78] Moberly, *William of Wykeham*, 49–50.
[79] Forest Proc. Exch. T.R. No. 151.
[79a] Duchy of Lanc. Forest Proc. bdle. 1, No. 26.

the manor of Worfield within the forest. The presentments were of the usual character, several persons being complained of as 'comen browsers' and 'fallyng hooli hawthorn and hasull'; entry was made of the numbers of sheep kept; 'by the reson of these shepe the Kynges dere can have no browsynge,' and it was further noted that 'the comyns of Bruggenorth have fette grenes out of the Forest bothe somer and wynter, in somer birches in winter holyes to the grete distruccon of the covert.' Poaching offences were also presented, and it was reported that Thomas Underhill 'kepith a ferett daily and so distroieth the conys within the forest.'

In November, 1552, Henry duke of Suffolk, 'chief Justyce and Justyce in Eyer of all the Kinges Magisties forrests, parkes, warrens and chaces on the side Trent,' wrote to his loving friends the auditors and receivers of the county of Salop, to the effect that Sir George Blount, keeper of the king's park of Cleobury Mortimer, part of the old forest of Wyre, had, for the preservation of the deer, renewed the park pale to the extent of 860 perches, at the charge of 10*d.* the perch, and done further repairs amounting in all to the sum of £37 13*s.* 4*d.* by the duke's warrant and ordering them to pay this amount, deducting from it the value of the tops, lops, and bark of the trees that Sir George had felled in the performance of his work. The sale only realised £3 19*s.* 2*d.* Sir George Blount's receipt for the full amount of the money expended on the park pales is appended to the other documents.[80]

By the middle of the sixteenth century the crown rights in Shropshire, which had extended in the early Norman days over half the county, had dwindled to a few thousand acres.

A survey of all the king's and queen's woods, forests, and chases within the county of Salop was taken in 1556 by Geoffrey Lee, general woodward.[81] In the parish of Wombridge there were 38 acres of woods of diverse growths, of which 13 acres were unsold, worth 10*s.* the acre. In the wood called the Forest of Bentley (north-east of Bridgnorth) there were 3½ acres of wood, with eighty oaks, worth £10. Within the Forest of Morfe was a wood of 1,200 acres, worth 20*s.* the acre. In Cleobury Park, belonging to the Forest of Morfe, the wood covered 52 acres and was worth £1 13*s.* 4*d.* the acre. In Yarm Wood, belonging to Wyre Forest, there were 1,000 acres of great wood and timber, worth 20*s.* an acre; in this wood 200 trees of the best sort had been felled and sold within the year. In the parish of Stanton, a wood called the Frythe contained 46 acres, where about a hundred trees had been felled during the year for firewood. In the parish of Culmington there was a common wood with 1,000 trees, of which 300 were timber trees, and the rest for firewood; out of this wood the Council of the Marches had 60 wain-loads of wood by their warrant bearing date 1 Mary. In the parish of Botwood there were two woods of the united area of 60 acres, wherein were growing 800 oaks, the most part for firewood. In the parish of Wenlock there was a common wood containing 1,000 acres, out of which wood the smithies are served with wood yearly, and divers others had customary wood there. Within Fayzley Wood were 20 acres of underwood. The common wood called 'Homer' contained 26 acres of sixty years' growth, worth 13*s.* 4*d.* the acre, 'but the inhabitauntes wold be lothe to have the same sold, having no tymber else where for to repaire their houses.' In the lordship of Whittington was a common wood called 'Davye,' containing 900 acres, with great oaks, worth one with another 33*s.* 4*d.* the acre.

The woodward-general authorized the sale, during the ensuing year of 200 vomell[81a] trees within Yarm Wood belonging to the Earldom of the Marches for firewood; 100 old trees in Shirlott Wood, to be sold to the poor for fuel; 100 trees in the Forest of Morfe for fuel; and 100 vomell trees in the Frythe Wood of Stanton parish.

Trees, stubbs, and pollards were sold 21 Elizabeth in Clun lordship to the value of £17 11*s.* 3*d.*, as set forth in the detailed return of Charles Walcott, the woodward.[82]

There are but two or three of the twenty-three Shropshire parks shown on Saxton's map of 1577 which are now extant. A large park is therein marked at Kenwick, a little to the south of Ellesmere; this has been long disparked; it is supposed to have originally belonged to Haughmond Abbey. There was another ancient park at Ruyton near Baschurch, around the seat of the Le Strange family; it is noticed as early as the reign of Richard I. In 1195 John Le Strange entered into a covenant with the abbot of Shrewsbury to the effect that the latter conceded to Le Strange a corner of his wood of Birch from the place where it adjoined Le Strange's park-fence by the water of Perry to the Plat mill. For this enlargement of his park Le Strange was annually to give the abbey a doe by way of rent.[83] A third park, nearer to Shrewsbury, marked by Saxton, was that of Shrawardine, attached to the ancient castle which at one time belonged to the Earls of Arundel.

[80] Forest Accts. Exch. $\frac{150}{14}$.

[81] Ibid. $\frac{150}{28}$.

[81a] This highly exceptional word *vomell* probably implies decayed trees, from the French *vermoulu*, wormeaten.

[82] Forest Accts. Exch. $\frac{536}{17}$.

[83] Eyton, *Antiq. of Shrops.* x, 133.

On the borders of Cheshire, in the extreme north of the county, Saxton marks four nearly adjacent parks, Blakemere, Ightfield, Shavington, and Adderley. The last of these still exists; it was imparked by Walter de Dunstanville, lord of Adderley, out of Belton, by leave of Ralph abbot of Shrewsbury, between the years 1175 and 1190.[84] Blakemere, which originally belonged to the Le Stranges, is thus named by Leland, when making his progress through the county :—

> From Whitchurch a mile and a half, I cam by the pale of the large parke of Blakmer longyng to the Erle of Shrewsbiri, wherin is a very fair place or loge. The Park hath both red deer and falow. In the park (as I herd say) be iij fair poles, of the wich I saw by the pale the largest, caullid Blakem, whereof the park is named.[85]

As to Ightfield, Leland elsewhere writes :—'Syr Richard Manoring, chefe of that name, dwelleth a iij miles be est from Price village at a village caulled Hightfelde, having a Parke and greate plenty of wood about hym.' [86]

Midway between Wem and Cheswardine, Saxton figures a park at Hodnet. This was an ancient park ; the earliest known mention of it occurs towards the end of the reign of Henry III, when by an inquest held in 1275 it was found that it would be no injury if Sir Odo de Hodnet inclosed two footpaths which ran through the centre of Hodnet Park, provided he gave a different course to the paths outside the park, the one towards the east and the other towards the north.[87]

Saxton also marks two parks near adjoining, to the south of Hodnet, Stanton, and Shawbury. At the last of these Giles de Erdington had licence, in 1253, to make a deer-leap into his park.[88]

Edward I, in 1297, licensed the abbot of Haughmond to inclose twenty acres of his wood in the bailiwick of Haughmond,[89] and Edward II, in 1313, extended this licence to sixty additional acres in the same forest ; [90] these grants were probably the origin of the large park at Haughmond figured on Saxton's map.

Other parks in this part of the county marked on the Elizabethan map are those of High Ercall and Lilleshall. Further south, on the Staffordshire borders, were the ancient parks of Shifnal, Tong Castle, and Albrighton. The last of these is thus noticed by Leland :— 'Syr John Talbot that maried Troutbecks Heire dwellith in a goodly logge in the hy toppe of Albrighton park, it is in the very egge of Shropshire, 3 miles from Tunge.' [91] Elsewhere Leland says that this park is named Pepper Hill, and it is thus marked on Saxton's map.[92]

To the south of the Severn, both Leland and Saxton notice a park at Willey, on the bounds of the Forest of Shirlott, and south of this the latter marks a park at Upton Cressett. More in the centre of the shire, but south of Shrewsbury, Saxton shows parks at Langley and at Plaish and also another at Rowton, eight miles west of the county town.

In the south of the county other important parks are marked by Saxton. Such were those of Oakly, to the west of Ludlow, and Stoke St. Milborough, a little to the north of that town ; also Dean Park, near Burford, on the very verge of Worcestershire, and the large park of Cleobury, on the south-east, part of the old Forest of Wyre. There are now eleven deer-parks in Shropshire, three or four of which are of ancient origin and on the site of early forests.[93]

Acton Burnell Park, the seat of Captain Sir J. Walter Smythe, bart., has a circuit of nearly four miles and includes about 300 acres, exclusive of extensive adjacent woodlands. It is stocked with a herd of 150 fallow deer. The park is thickly timbered with oak, chestnut, yew, birch, and elm. Some of the oldest trees are of great size ; the largest yew has a girth of 29 ft. A short time since fifteen acres of larch were planted and it was intended to continue this yearly ; but the project had to be abandoned, for it was found impossible, owing to the boulders and rocks, to exterminate the rabbits.[94] This is an ancient park ; it was first inclosed by Robert Burnell, the celebrated bishop of Bath and Wells, in 1266.[95]

Apley Park, near Bridgnorth, the seat of Mr. W. H. Foster, covers 434 acres of beautifully-wooded land on the banks of the Severn ; it is stocked with about 300 head of fallow deer. This modern park is very well timbered with oak, lime, elm, and Spanish chestnut. There has been much replanting on the estate during recent years, and several small new coverts have been laid out.[96]

[84] Eyton, *Antiq. of Shrops.* ix, 199.
[85] Leland, *Itin.* v, 90.
[86] Ibid. vii, 24.
[87] Inq. p.m. 41 Hen. III, No. 45.
[88] Pat. 37 Hen. III, m. 10.
[89] Pat. 25 Edw. I, pt. i, m. 1.
[90] Pat. 6 Edw. II, pt. ii, m. 15.
[91] Leland, *Itin.* v, 29.
[92] Ibid. vii, 24.
[93] The few notes on each of these parks are in part the result of personal observation, but are chiefly taken from communications made by the owners or agents.
[94] Information from Sir J. W. Smythe.
[95] Pat. 50 Hen. III, m. 3.
[96] Information from Mr. W. O. Wilson.

Attingham Hall (on the estate of Lord Berwick) stands in a beautiful deer-park of 124 acres, which is stocked with a herd of from 150 to 200 dark fallow deer. The park fence is of rough oak, with upright pales of unequal height. It contains a heronry of some fifteen to twenty nests. The rabbits of this park are exceptionally abundant; as many as 1,500 have been shot in a single day.[97]

Boreatton Hall (Mr. Rowland Hunt, M.P.) has a heavily-timbered deer-park of 140 acres, stocked with some 70 fallow deer.

Chetwynd Park, the residence of Mr. J. Sydney Burton Brough, has an area of 210 acres, inclosed by a wall of red sandstone. There is a herd of about 80 fallow deer; the bucks, at killing time, average about 100 lb. each. The park is well timbered and includes some fine larches and a good avenue of oaks. Of recent years there has been yearly planting of trees on the estate for timber purposes, chiefly larch and Scotch fir.[98] This park dates from early in the nineteenth century.

Hawkstone Park, in Hodnet parish, long the seat of the Hill family, but now the property of George Whiteley, esq. (the present first Liberal Whip), embraces a noble and picturesque area of 990 acres. The fallow deer in 1906 numbered 200. Much of the oldest timber has gone, and what is left has passed beyond its prime. One of the noticeable trees is an oak which is so perfect in symmetry that it does not at first sight appear of any particular size, but measurement shows that it has a girth of about 18 ft. There has been but little planting carried out on the estate during recent years, except for ornamental and game purposes.[99] This park is said to have been disparked in 1770, but restored in 1830.[100]

Henley Hall in Bitterley parish, the seat of Mr. John Baddeley Wood, stands close to a park of 51 acres and is stocked (1907) with 35 red deer and 40 fallow deer. The supply of deer is rather more than such an acreage could be expected to carry, but the land is good and there are many oaks which give a good food supply; they are also well fed in the winter. The herd of red deer was established by Mr. Wood in 1892, but the fallow deer with the park itself have come down from remote times. The timber is fine; one noble oak has a girth of 25½ ft. at 5 ft. from the ground, and is supposed to be one of the tallest oaks in all England. The park lies one field away from the front of the hall, as is not infrequently found to be the case with old parks; new parks generally come up immediately to the 'grounds' of the residence.[101]

Longnor Park (Mr. Edward Corbett) is one of the smallest deer-parks in England; it has an area of 48 acres, and carries from 30 to 35 head of fallow deer. It is well timbered, chiefly with oak and beech. Recent planting on the estate has been confined to the replanting of the coverts.[102] Longnor Park is mentioned by Leland in the time of Henry VIII.[103]

Loton Park, Alberbury, the seat of Sir Bryan Baldwin M. Leighton, bart., has a well-wooded area of about 400 acres surrounded by a stone wall. It is stocked with a herd of 150 fallow deer; it also includes a large rabbit-warren. This beautiful park is nobly timbered with monster oak, sycamore, beech, and elms, and there are also fine clumps of cedar and Douglas firs and other ornamental trees. There are many large old hawthorns, not a few of which are covered with mistletoe.[104]

Mawley Hall, Cleobury Mortimer, the residence of Mr. H. C. V. Hunter, stands in a richly-wooded deer-park of 92 acres. Some of the oak timber is exceptionally fine; it formed part of the old Forest of Wyre. The park is stocked with about 100 fallow deer.

Oteley, near Ellesmere, the seat of Mr. C. F. Kynaston Mainwaring, stands in a finely-wooded park of 135 acres, stocked with eighty fallow and twenty red deer. The red deer were introduced about 1875, but the fallow deer have been established at Oteley for many centuries. The park is thickly timbered, the older portion chiefly with oak of considerable age, a few of which are of large dimensions. About a century ago the bounds of the park were considerably altered and a new area added by the then owner.[105] This is a very ancient park; it is said to have been impaled in the fourteenth century.[106]

There are a large number of parks scattered throughout the county which are not stocked with deer, but are all more or less well wooded, whilst some include much fine forest timber. Several of these are pre-eminent for their size and beauty, or antiquity. Kinlet Park, the seat of Mrs. Childe,

[97] Information from Messrs. Burd and Evans.
[98] Information from Mr. J. P. Pritchard.
[99] Information from Mr. Gardener.
[100] Shirley, *Deer Parks*, 202.
[101] Information from Mr. J. B. Wood.
[102] Information from Mr. Edward Corbett.
[103] Leland, *Itin.* v, 30.
[104] Information from Mr. Charles Davenport.
[105] Information from Mr. Kendal.
[106] Shirley, *Deer Parks*, 201.

in the south-east of the county, formed part of the great forest of Wyre; there are about 1,200 well-timbered acres and the oaks are among the finest in England. The next largest park is that of the Earl of Powis, at Walcot in the south-west of the county; it incloses about 1,000 acres; it is of no great age, but in 1813 this park is described as 'very extensive and finely laid out, and abundantly stocked with deer.'[107] Other exceptionally fine or old parks are Oakly, Lord Windsor, 400 acres; Brogyntyn, Lord Harlech, 300; Adderley, Mr. Reginald Corbett, 218; Aston, near Oswestry, General Lloyd, 400; Aldenham, Lord Acton, 170; Willey, Lord Forester, 150; and Burwarton, Viscount Boyne, 200.

There remain a few others, which would be more distinguished in almost any other county than Shropshire, where so many large and beautiful parks abound; such as those of Berwick, Hardwick Grange, Longford, Petton, Pradoe, Rowton Castle, Ruyton Towers, Tedsmore, Tong Castle, and Woodhouse. Linley Hall, in More parish, is approached by a double avenue of oaks three-quarters of a mile in length.

An article on Shropshire forestry would not be complete without some reference, however brief, to some of its most celebrated trees.

In Oakly Park, near Ludlow, there are some half-dozen very old trees known as the 'Druid Oaks,' a misnomer which gives them, in the eyes of the vulgar, a fictitious antiquity.

Cressage, a hamlet of the parish of Cound, bore the name of Cristesache when the Domesday Survey was taken. Mr. Eyton supported the popular opinion that this is a close following by the Norman scribe of the Saxon orthography of Christ's Oak, and concludes that the name originated from the time when Christian missionaries preached here beneath an oak to the pagan Saxons.[108] After the original Christ's Oak had perished, the name appears to have suggested that another oak should have a Christian appellation attached to it, and hence arose the title of Lady Oak, or Oak of our Lady. The vast hollow trunk of the ancient Lady Oak still stands in a field adjoining the high road to Shrewsbury. Within the hollow a young oak is growing; the aged parent tree was nearly destroyed by an accidental fire in 1815, but still retains a certain amount of vigour.

In the Stiperstones Forest is a remarkable wood, composed entirely of holly trees; according to local tradition they were planted in the reign of William Rufus; they are evidently of great age.

The Quatford Oak is an ancient tree, under which, according to local legend, Countess Adeliza met her husband Roger de Montgomery on her return from a journey, and persuaded him to build the votive church of St. Mary Magdalene of Quatford as a thankoffering for her deliverance from shipwreck.

At Shelton, two miles from Shrewsbury, is Glendower's Oak, from which Owen Glendower, according to the local legend, watched the battle of Shrewsbury. It is known as a matter of fact that Glendower was fighting in Wales at the time, but the oak is an interesting relic and is evidently of great age. It measures 42 ft. in circumference near the ground, and 29 ft. at 5 ft. from the ground. It is hollow, and at 3 ft. from the ground its internal measurement is 31 ft. It is now quite dead, but was living in 1901. An account of it was written by Adam Waring, on whose property it stood, in April, 1543.

Just within the Shropshire border stands, or rather stood, the famous Boscobel Oak, in which Charles II took refuge after the battle of Worcester. The original tree appears to have been destroyed by relic hunters in the seventeenth century, but there seems little doubt that the present Boscobel Oak is a descendant of the old one.

In the grounds at the back of the fine Elizabethan house of Pitchford Hall is an ancient lime tree of immense size, which has been known for some centuries as 'The Tree with a House in it.' This summer-house, which is still maintained, rests on the great bole of the tree where the branches begin to spread; it is 9 ft. 2 in. square, and 7 ft. in height to the spring of the roof.

For the early history of arboriculture in the county little material seems to be available, but an isolated entry of considerable interest occurs in 1374, when the parker of Earnwood accounted for 6*d.* paid for 1 pottle of tar (*potell de tarre*) bought with which to paint the trees to prevent their being eaten by rabbits.[109] Shropshire does not seem to have played a prominent part in the arboricultural experiments of the seventeenth century, but considerable light is thrown upon the condition of its woodlands at a later period by two reports made in 1791 and 1807 by Edward Harries in reply to inquiries made by the Land Revenue Commissioners as to the supply of oak available for the Navy. From these reports[110] we learn that, although few counties had been so well furnished with oak timber, it had been greatly diminished. In 1791 Harries estimated that there was scarcely a fourth of what there had been thirty years earlier, and during that time something like £200,000 worth of oak timber had been sold, so that there were scarcely more than two or three estates which

[107] *Beauties of Engl. and Wales*, 'Shrops.' 256.
[108] Eyton, *Antiq. of Shrops.* vi, 389.
[109] Mins. Accts. bdle. 967, No. 3.
[110] *Trans. Shrops. Arch. Soc.* (2nd Ser.), iv, 86–95.

could furnish sufficient for a 74-gun ship. Timber had risen about a third in price, while underwood for fuel then sold at 17*s.* the cord, and was so expensive that farmers generally used coal, though much underwood was required for the iron forges and collieries. Oak, however, was still as cheap to build with as deal, and Harries opposed any additional duty on the latter on the ground that if deal were made cheaper the oak could be reserved for the Navy. New plantations of oak were few and small. At this time it was usual

> to leave kind-growing saplings at the stated period of falling woods. At a second fall (if promising), they are sometimes permitted to stand for timber ; our coppices are generally fallen at about 21 to 25 years' growth, and all the poles are barked. If fallen at about 18 years' growth it is converted into cord wood for the forges and not barked.

By 1807 the oak timber had still further decreased and very little was being planted, though 'the late Reverend John Robert Lloyd of Aston obtained the honour of a Gold Medal for a plantation of oaks, &c.' Some good oak groves had been

> produced from a careful attention to the young saplings that will grow up in coppices where cattle are not suffered to be turned into them, and cutting away the growth from the stools that interfere with them ; and if the stools are cut close to the ground at the time of falling the poles that arise from them may be so selected that they will grow to be useful, tho' not to timber of the first rate. In a wood of fifty acres adjoining Mr. Child of Hintels (? Kinlet) Park there is every appearance that it will arise to a considerable size in about fifty years' growth or more.

It was usual to make mixed plantations, fir, beech, ash, and especially sycamore being put with the oak ; this served the double purpose of sheltering the young oaks from the cold and of drawing them up, counteracting their natural tendency to form lateral shoots.

> It has been said that 'you must not prune the oak,' but done with care you may forward its growth in its early stages, perhaps till it is fifteen feet high or more ; some of its laterals may be cut close to its trunk, the bark will heal over in a year or two.

Harries advocated planting oak in dingles unsuitable for conversion into arable, and as an instance adds—

> There is in view from whence I write (Arscott), forming a side of the narrow but romantic vale of Habberley, a wood called the Nessons, the property of the Earl of Tankerville, consisting of about two hundred acres in which is regularly scattered young timber finely grown, that in thirty or forty years will be of the largest size and best quality. Higher up the vale is some oak timber of Lord Berwick's not inferior to that below. . . . Adjoining to this property is Mr. More's of Linley, who passed a long life in the employment of building a large and excellent house, raising the plantations I have before mentioned, which are so ornamental to the country and profitable to the present Mr. More, and shew in the most convincing manner what may be done on the properties I have mentioned and many others in this part of Shropshire.

Although oak was not much planted, larches and firs were popular, being of much more rapid growth and more economical of space, so that at forty years' growth, by which time they could be used for all the common purposes of building, 'there may stand four times the number and quantity of feet than there will be of oak in the same period.' Poplars were also well spoken of—'for rapidity of growth in soils adapted to them no tree is so profitable ; the boards make good chamber floors, particularly for servants' rooms, as they are almost proof against fire.'

A preliminary report as to the condition of agriculture in Shropshire was prepared for the Board of Agriculture in 1794. This report, expanded by additional information, was reproduced and edited by the Rev. Joseph Plymley, archdeacon of Shropshire, in 1803.[111] Chapter x (pp. 212–220) deals with woods and plantations. It is therein stated that notwithstanding large yearly falls of timber there were still some very fine woods of oak growing in this county. There was also much hedgerow timber, consisting chiefly of oak and ash, but including occasional wych-elms, beeches, limes, and sycamores. Poplars were not uncommon by the sides of brooks and small rivers. There were a few yew trees, but the holly, 'that beautiful tree and useful fence,' was for the most part neglected or destroyed. Birches were fairly common in the south-west district. Modern plantations of conifers, generally mixed with deciduous trees, were numerous. At Linley, near Bishops Castle, were considerable plantations of larch, Scotch and spruce fir, 'as old, I believe, as most plantations of the sort in South Britain.'

It is stated that no tree grew more luxuriously on Shropshire soil than the beech ; trees supposed to have been planted ninety years ago had attained to a girth of 9 ft. at 6 ft. from the ground. Few persons in Shropshire at that period would consent to bury their relations in coffins

[111] Plymley, *General View of the Agriculture of Shropshire.*

made of anything but the very best oak, and the archdeacon had 'no doubt of the propriety of prohibiting the use of oak upon such occasions, when the bulwark of the nation is in need of it.' Great supplies of Shropshire oak were sent to Bristol for ship-building, and the stock had considerably diminished within the last thirty years.

The attention paid to arboriculture during the last quarter of a century has resulted in a distinct increase in the woodland area of England and Wales. In this increase Shropshire has had a moderate share. The total acreage of woods and plantations in 1888 was 47,088; it had risen in 1891 to 49,093. Four years later the acreage was 50,493, whilst the last returns, made up on 4 June, 1905, show a total of 51,425. This last return is usefully divided under three heads, showing that the acreage of coppice, meaning by that term woods that are cut over periodically and reproduce themselves naturally by stool shoots, is 14,395; and the acreage of plantation planted or replanted within the last ten years is 1,602; leaving the remainder of 35,428 under the head of 'other woods.'

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